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**Corporate Accounting
&
Financial Management**

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TaxMajal

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Chapterwise Marks Distribution

S. No.	Chapter	2018		2019		2020		2021		2022		2023	Avg.
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1.	Introduction to Accounting	-	-	5	-	-	-	-	-	-	-	-	0.45
2.	Introduction to Corporate Accounting	-	8	13	5	-	5	17	3	-	-	-	4.64
3.	Accounting Standards	5	-	-	-	-	-	-	-	-	-	-	0.45
4.	Accounting for Share Capital	13	15	13	10	-	5	10	19	-	-	-	7.72
5.	Accounting for Debentures	14	10	18	8	-	5	-	13	-	-	-	6.18
6.	Related Aspects of Company Accounts	-	15	14	-	-	5	5	-	5	-	-	4.00
7.	Consolidation of Accounts	5	7	17	8	-	-	8	13	-	-	-	5.27
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19.	Operational Approach to Financial Decision	-	-	5	-	-	-	-	-	-	-	-	0.45

J : June; D : December

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PART I

CORPORATE ACCOUNTING

(60 MARKS)

1

CHAPTER

INTRODUCTION TO ACCOUNTING

THEORETICAL QUESTIONS

Q. 1. Write a note on: Accounting Cycle

[Dec. 1995 (5 Marks)], [Dec. 1997 (5 Marks)]

Ans. The Series of business transactions which occur from the beginning of an accounting period to the end of an accounting period is referred any specific period of time for which a summary of business's transaction is prepared.

Process of accounting cycle:

- (1) Journalizing (Recording)
- (2) Posting to ledger (Classifying)
- (3) Final account (Summarizing)

Steps or Phases of Accounting Cycle: The steps or phases of accounting cycle can be developed as under:

- (a) **Recording of transaction:** As soon as a transaction happens it is at first recorded in subsidiary book.
- (b) **Journal:** The transactions are recorded in the journal chronologically.
- (c) **Ledger:** All journals are posted into ledger chronologically in a classified manner.
- (d) **Trial Balance:** After taking all the ledger account closing balances, a Trial Balance is prepared at the end of the period for the preparations of financial statements.
- (e) **Adjustment Entries:** All the adjustments entries are to be recorded properly and adjusted accordingly before preparing financial statements.
- (f) **Adjusted Trial Balance:** An adjusted Trail Balance may also be prepared.
- (g) **Closing Entries:** All the nominal accounts are to be closed by transferring them to Trading Account, and Profit and Loss Account.
- (h) **Financial Statements:** Financial statement can now be easily prepared which will exhibit the true financial position and operating results.

Q. 2. Write a short note on: Subsidiary books of account

[Dec. 1995 (5 Marks)], [Dec. 1998 (5 Marks)]

Ans. Journal is subdivided into various parts known as subsidiary books or subdivisions of journal. A register of this type is called a **book of original entry** or of **prime entry**.

Each one of the subsidiary books is a special journal and a book of original or prime entry. There are no journal entries when records are made in these books.

There are different types of subsidiary books which are commonly used in any big business concern. They are:

- (1) Purchases book
- (2) Purchases returns books
- (3) Sales book
- (4) Sales returns books
- (5) Cash book
- (6) Bills receivable books
- (7) Bills payable books
- (8) Journal Proper

Q. 3. Write a short note on: Petty Cash Book

[Dec. 1996 (5 Marks)], [Dec. 1999 (5 Marks)]

Or

Write a short note on: Imprest System

[June 2002 (5 Marks)], [Dec. 2002 (5 Marks)]

Ans. A business house makes a number of small payments like telegram, textiles, cartage etc. If all these transactions are recorded in cash book the cash book may become bulky and the main cashier's work will also increase therefore usually firms appoint a petty cashier who makes these small payments and keep record of these payments in a separate cash book which is called petty cash book.

Advantage of petty cash book: There are mainly four advantages:

- (1) **Saving of time:** Saving of time of the chief cashier.
- (2) **Saving of labour:** Saving in labour in writing up the cash book.
- (3) **Control:** It provides control over small payments.
- (4) **Convenience** in preparing ledger amounts.

Imprest System for petty cash book: The petty cashier is given a sum of money in the beginning of the period. During the period he makes payment out of this money. At end the firm reimburses him the amount paid by him so that the balance of cash with him remains same in the beginning of the period as well as at the end of the period. This is called the imprest system of petty cash book.

Q. 4. Distinguish between: Double Entry System & Single Entry System

[Dec. 1998 (8 Marks)], [Dec. 2007 (4 Marks)]

Ans. Following are the main points of distinction between double entry system and single entry system:

Points	Double Entry System	Single Entry System
Recording of transaction	Under double entry system, both the aspects <i>i.e.</i> debit and credit of all the transactions is recorded.	Under single entry system, there is no record of some transactions; some transactions are recorded only in one of their aspects whereas some other transactions are recorded in both of their aspects.
Subsidiary book	Under double entry system, various subsidiary books like sales book, purchases book etc. are maintained.	Under single entry system, no subsidiary book except cash book is maintained.
Ledgers	Under double entry system, there is a ledger, which contains personal, real and nominal accounts.	Under single entry system the ledger contains some personal accounts only.
Trial balance	Under double entry system, preparation of trial balance is possible.	It is not possible to prepare a trial balance under single entry system. Hence accuracy of work is uncertain.
Financial statements	Under double entry system trading and profit and loss account and balance sheet are prepared in a scientific manner.	Under single entry system it is not possible, only a rough estimate of profit and loss is made and a statement of affairs is prepared which resembles balance sheet in appearance but which does not present an accurate picture of the financial position of the business.
Who employs	Most of the business organization employs double entry system.	Single entry system is used only by very small business units.

Q. 5. Write a short note on: Accounting Equation

[June 1999 (5 Marks)], [Dec. 2006 (5 Marks)]

Ans. According to dual aspect concept, two aspect of every transaction should be considered. This concept is based on double entry book-keeping which means that accounting system is set up in such a way that a record is made of the two aspect of each transaction. The recognition the two aspects to every transaction is known as dual concept. Modern financial accounting is based on this concept. That's why every entry consists of Dr. to one account and Cr. to some other account. Thus, total amount debited will always be equal to the total amount credited.

This gives us Accounting Equation: $\text{Capital} = \text{Assets} - \text{Liabilities}$

The above equation can be presented in different ways as shown below:

$$\text{Capital} + \text{Liabilities} = \text{Assets}$$

$$\text{Capital} + \text{Long Term Liabilities} + \text{Current Liabilities} = \text{Fixed Assets} + \text{Current Assets}$$

$$\text{Capital} + \text{Long Term Liabilities} = \text{Fixed Assets} + \text{Working Capital}$$

$$\text{Net Worth} = \text{Fixed Assets} + \text{Current Assets} - \text{Long Term Liabilities} - \text{Current Liabilities}$$

$$\text{Capital} + \text{Long Term Liabilities} + \text{Current Liabilities} - \text{Fixed Assets} - \text{Current Assets} = 0 \text{ (Zero)}$$

Q. 6. Write a short note on: Cash Book**[Dec. 2001 (5 Marks)]**

Ans. Cash book is a sub-division of Journal recording transactions pertaining to cash receipts and payments. Firstly, all cash transactions are recorded in the cash book wherefrom they are posted subsequently to the respective ledger accounts. The cash book is maintained in the form of a ledger with the required explanation called as narration and hence, it plays a dual role of a journal as well as ledger. All cash receipts are recorded on the debit side and all cash payments are recorded on the credit side. All cash transactions are recorded chronologically in the cash book. The cash book will always show a debit balance since payments cannot exceed the receipts at any time.

Kinds of Cash Book: From the above it can be observed that the cash book serves as a subsidiary books as well as ledger. Depending upon the nature of business and the type of cash transactions, various types of cash books are used. They are:

- ◆ Single column cash book
- ◆ Two column cash book (Cash & discount columns)
- ◆ Three columnar cash book (Cash, bank & discount columns)

Q. 7. What are the objectives of Accounting?**[June 2002 (5 Marks)], [Dec. 2007 (5 Marks)]**

Ans. Objective of accounting may differ from business to business depending upon their specific requirements. However, the following are the general objectives of accounting.

- (1) **To keep systematic record:** It is very difficult to remember all the business transactions that take place. Accounting serves this purpose of record keeping by promptly recording all the business transactions in the books of account.
- (2) **To ascertain the results of the operation:** Accounting helps in ascertaining result *i.e.* profit earned or loss suffered in business during a particular period. For this purpose, a business entity prepares either "Trading and Profit & Loss A/c" or an "Income & Expenditure A/c" which shows the profit or loss of the business by matching the items of revenue and expenditure of the same period.
- (3) **To ascertain the financial position of the business:** In addition to profit, a businessman must know his financial position *i.e.* availability of cash, position of assets and liabilities *etc.* This helps the businessman to know his financial strength. Financial statements are barometers of health of a business entity.
- (4) **To portray the liquidity position:** Financial reporting should provide information about how an enterprise obtains and spends cash, about its borrowing and repayment of borrowing, about its capital transactions, cash dividends and other distributions of resources by the enterprise to owners and about other factors that may affect an enterprise's liquidity and solvency.
- (5) **To protect business properties:** Accounting provides up to date information about the various assets that the firm possesses and the liabilities the firm owes, so that nobody can claim a payment which is not due to him.
- (6) **To facilitate rational decision-making:** Accounting records and financial statements provide financial information which help the business in making rational decisions about the steps to be taken in respect of various aspects of business.

- (7) **To satisfy the requirements of law:** Entities such as companies, societies, public trusts are compulsorily required to maintain accounts as per the law governing their operations such as the Companies Act, Societies Act, and Public Trust Act *etc.* Maintenance of accounts is also compulsory under the GST Act, 2017 and Income-tax Act, 1961.

Q. 8. Explain: Single entry system of accounting

[June 2002 (5 Marks)]

Or

“Single entry system of book keeping is an unscientific, incomplete & defective system.” Comment.

[June 2005 (4 Marks)]

Ans. Single entry system is development by certain business houses for their convenience and for more practical approach. They reject strict rules of the double entry system and maintain only bare essential records. Small merchants usually adopt this system. Joint stock companies cannot adopt single entry system as they are required to maintain the accounts as per Double Entry System under the Companies Act, 2013.

Salient features single entry system:

- (1) **Maintenance of personal accounts:** Usually under this system, personal accounts are maintained while real and nominal accounts are avoided.
- (2) **Maintenance of cash book:** A cash book is maintained which usually mixes up both personal transaction and business transactions.
- (3) **Dependence on original vouchers:** In order to collect the necessarily information, the original vouchers are referred.
- (4) **Suitability:** The system is suitable in case in case of small proprietary or partnership concerns.

Advantages single entry system:

- (1) Single entry is a simple method of recording business transactions.
- (2) It is mainly suited to small business concerns with limited number of transactions.
- (3) Under single entry system, accounting records can easy to maintain as their maintenance does not acquire and adequate knowledge of the principles of book keeping.
- (4) It is comparatively less expensive than double entry system of books keeping.
- (5) Ascertainment of profit or loss is much easier. It is ascertained by comparing the financial position of the business at the close of the accounting period with that at the beginning.

Q. 9. Write a note on: Contingent liabilities

[June 2005 (5 Marks)]

Ans. Contingent Liabilities: These are not actual liabilities but their becoming actual liability depends on the happening of certain events. If such events do not occur, no liability is incurred.

Liability in respect of pending suit is a contingent liability because it is only if and when suit is lost that the liability will be incurred.

Bills discounted with a bank are also a contingent liability because if the acceptor fails to meet the bill on due date, the firm will become liable to the bank.

Treatment of contingent liabilities: Contingent liabilities are not shown in balance sheet. Usually a foot note is appended at the balance sheet for such liabilities.

Examples: Following are some examples of contingent liabilities:

- ◆ Liabilities under guarantee.
- ◆ Claim against the company not acknowledged as debts.
- ◆ Bonus claim filed worker pending order of Court.
- ◆ Liabilities on bills receivable discounted but not matured.

Q. 10. Distinguish between: Book Keeping & Accounting [Dec. 2009 (4 Marks)]

Ans. Following are the main points of difference between book keeping & accounting:

Points	Book keeping	Accounting
Meaning	Book keeping is mainly concerned with recording of financial data relating to business in a significant and orderly manner.	Accounting is the art of recording, classifying and summarizing in a significant manner and in terms of money, transactions and event which are in part at least of a financial character and interpreting the results thereof.
Transactions	It is concerned with the recording of transactions.	It is concerned with the summarizing of recorded transactions.
Work	The work of book keeping is mainly routine and clerical nature.	The work of accounting requires high level of knowledge, conceptual understanding and analytical skill.
Base	Book keeping is base for accounting.	It is considered as the language of business.
Financial statements	Financial statements do not form part of this process.	Financial statements are prepared in this process on the basis of book keeping records.
Sub field	There is no sub field of book keeping.	There are several sub-fields of like financial accounting, cost accounting, management accounting.
Financial position	Financial position cannot be ascertained through book keeping.	Financial position is ascertained on the basis of accounting process.

Q. 11. State the advantages of sub-division of Ledger. [June 2019 (5 Marks)]

Ans. Advantages of sub-division of ledger are:

1. **Easy to divide work:** As a result of sub-division, records can be maintained efficiently by the concerned employee.
2. **Easy to handle:** As a result of sub-division, the size and volume of ledger is reduced.
3. **Easy to collect information:** From the different classes of ledger any particular type of transaction can be found out easily.
4. **Minimizations of mistakes:** As a result of sub-division chances of mistakes are minimized.
5. **Easy to compute:** As a result of sub-division, the calculations in accounting may be computed quickly which is very helpful to the management.
6. **Fixation of responsibility:** Due to sub-division, allotment of different types of work to different employees is done for which concerned employee will be responsible.

2

INTRODUCTION TO CORPORATE ACCOUNTING

CHAPTER

THEORETICAL QUESTIONS

Q. 1. What are the provisions relating to laying and adoption of financial statements? Explain the law relating to authentication of financial statements.

[June 2004 (5 Marks)], [Dec. 2012 (5 Marks)]

Ans. Compliance with respect to Financial Statements [Section 129(1)]: The financial statements:

- (a) shall give a true and fair view of the state of affairs of the company or companies.
- (b) shall comply with accounting standards notified under section 133.
- (c) shall be in the form provided in Schedule III.

Laying of financial statements at AGM [Section 129(2)]: At every AGM of a company, the Board of Directors of the company shall lay financial statements for the financial year.

Consolidation of accounts [Section 129(3)]: Where a company has one or more subsidiaries, it shall prepare a consolidated financial statement of the company and of all the subsidiaries in the same form and manner as that of its own which shall also be laid before the AGM of the company along with the laying of its financial statement.

The company shall also attach along with its financial statement, a separate statement containing the salient features of the financial statement of its subsidiary or subsidiaries in prescribed form.

The Central Government has been given power to provide for the consolidation of accounts of companies in prescribed manner.

The word "subsidiary" shall include associate company and joint venture.

Provisions applicable to financial statements of a holding company shall also apply to consolidated financial statements [Section 129(4)]: The provisions, which are applicable to the preparation, adoption and audit of the financial statements of a holding company shall, *mutatis mutandis*, apply to the consolidated financial statements of subsidiaries.

Deviation from the accounting standards [Section 129(5)]: Where the financial statements of a company do not comply with the accounting standards referred, the company shall disclose in its financial statements, the deviation from the accounting standards, the reasons for such deviation and the financial effects, if any, arising out of such deviation.

Exemption [Section 129(6)]: The Central Government may, on its own or on an application, exempt any class or classes of companies from complying with any of the requirements of this section or the rules made there under, if it is considered necessary to grant such exemption in the public interest. Such exemption may be granted either unconditionally or subject to such conditions as may be specified in the notification.

Disclosure of non-compliance with accounting standards [Section 129(5)]: Where the financial statements of a company do not comply with the accounting standards, the company shall disclose in its financial statements:

- Deviation from the accounting standards.
- Reasons for such deviation
- Financial effects arising out of such deviation.

Q. 2. Who are responsible for keeping the books of account a company? What are the liabilities imposed on them for their failure in this regard?

[Dec. 2004 (6 Marks)]

Or

Referring to the provisions of the Companies Act, 2013, explain whether the Company Secretary being a Chief Financial Officer of the Company can be held liable for maintenance of books of account of the company. [June 2016 (4 Marks)]

Or

Chief Financial Officer is responsible to maintain books of account of the company. Comment. [Dec. 2018 (5 Marks)]

Ans. Person responsible for keeping books of accounts [Section 128(6)]: Following persons are responsible for maintaining the books of accounts:

- (a) Managing director
- (b) Whole-time director in charge of finance
- (c) Chief Financial Officer
- (d) Any other person charged by the Board with the duty of complying with the provisions of Section 128.

Penalty: If person responsible for keeping and maintains of books of accounts fails to comply with the provisions of Section 128, he shall be punishable with fine which shall not be less than ₹50,000 but which may extend to ₹5,00,000.

Therefore, a Company Secretary being a Chief Financial Officer of the company can be held liable for maintenance of books of accounts of the company.

Q. 3. What are the provisions regarding filing of financial statement and other documents with ROC?

Or

Give your opinion whether the Registrar of Companies can take financial statement on record even if it is not laid before annual general meeting.

[Dec. 2006 (4 Marks)]

Ans. Adoption and filing of financial statements with ROC [Section 137(1)]: A copy of the financial statements, including consolidated financial statement, along with all the documents which are required to be or attached to such financial statements, duly adopted at the AGM, shall be filed with the Registrar within 30 days of the date of AGM in prescribed manner along with prescribed fees.

As per Rule 12 of the Companies (Accounts) Rules, 2014:

- (1) Every company shall file the financial statement with Registrar together with **Form AOC-4** and the consolidated financial statement, with **Form AOC-4 CFS**.
- (2) Companies notified by the Central Government shall mandatorily file their financial statement in Extensible Business Reporting Language (XBRL) format.

Filing of financial statements even if not adopted in AGM: Where the financial statements are not adopted at AGM or adjourned AGM, such unadopted financial statements along with the required documents shall also required to be filed with the Registrar within 30 days of the date of AGM.

The Registrar shall take them in his records as provisional till the financial statements are filed with him after their adoption in the adjourned AGM for that purpose.

Financial statements adopted in the adjourned AGM shall be filed with the Registrar within 30 days of the date of such adjourned AGM with prescribed fees.

Filing of financial statement in case of OPC: OPC shall file a copy of the financial statements duly adopted by its member, along with all documents required to be attached within 180 days from the closure of the financial year.

Attachment of accounts of foreign subsidiary: A company shall attach the accounts of its foreign subsidiary along with its financial statements to be filed with the Registrar.

If the foreign subsidiary is not required to get its financial statement audited under law their country, the holding Indian listed company can files such unaudited financial statement. Where such financial statement is in a language other than English then translated copy of the financial statement in English is required to be filed.

Financial statement to be filed even if AGM is not held [Section 137(2)]: Where the AGM of a company for any year has not been held, the financial statements along with the documents required to be attached, duly signed along with the statement of facts and reasons for not holding the AGM shall be filed with the Registrar within 30 days of the last date before which the AGM should have been held in prescribed manner along with prescribed fees.

Q. 4. What do you understand by 'provision for taxation'? What factors are to be considered while estimating the provision for taxation? [Dec. 2009 (6 Marks)]

Ans. Advance payment of tax: Each year the company has to pay advance tax on the basis of estimated income of current previous year. This is based on the logic that 'pay as you earn'. Journal entry for payment of advance tax is as follows:

Date	Particulars	Dr. (₹)	Cr. (₹)
	Advance Income tax A/c To Bank A/c (Being, Advance tax paid for the previous year)	Dr. xxxx	xxxx

Advance tax paid appears in balance sheet under the heading "Current Assets".

Provision for taxation: At the end of each previous year the company has to compute its total income and has to file return of total income, which is also known as self assessment. Based on self assessment the company has to make provisions for it in the final accounts by passing following journal entry.

Date	Particulars	Dr. (₹)	Cr. (₹)
	Profit & Loss A/c To Provisions For Tax A/c (Being, provisions for tax for the previous year)	Dr. xxxx	xxxx

Provisions for tax appears in balance sheet under the heading "Current Liabilities".

Factors are to be considered while estimating the provision for taxation:

- Whether income has correctly computed
- Whether income tax has computed as per applicable law.
- Whether capital gain tax is payable or not
- Whether rebates are available for double taxation

After completion of assessment following entry is passed for the amount of advance tax paid for the respective year.

Date	Particulars	Dr. (₹)	Cr. (₹)
	Provisions For Tax A/c To Advance Income tax A/c (Being, provisions for tax for the previous year)	Dr. xxxx	xxxx

Additional adjustment entries required to be passed on completion of assessment according to the situation are as follows:

Date	Particulars	Dr. (₹)	Cr. (₹)
	When provision is less: Profit & Loss A/c To Provisions For Tax A/c	Dr. xxxx	xxxx

Date	Particulars		Dr. (₹)	Cr. (₹)
	When provision is more:	Dr.	xxxx	
	Provisions For Tax A/c			xxxx
	To Profit & Loss A/c			
	For balance tax liability:	Dr.	xxxx	
	Provisions For Tax A/c			xxxx
	To Liability for Taxation A/c			

Q. 5. The power of directors to approve the financial statement can be delegated to a committee of director or some of the directors. Comment.

[June 2010 (4 Marks)]

Or

The Board of Directors of Grow More Limited, a public company, has duly delegated its power to approve the financial statement of the company for the year 2014-2015 to a committee of directors. The said committee considered the financial statement and approved the same before the financial statement were handed over to the statutory auditor of the company. Will you accept such approval of financial statement?

[June 2012 (5 Marks)]

Ans. As per Section 134(1) of the Companies Act, 2013, the financial statement, including consolidated financial statement, if any, shall be approved by the Board of Directors before they are signed.

In terms of Section 179(3)(g), financial statement and the Board's report must be approved in Board Meeting. The board of directors cannot delegate power to approve the financial statements to a committee of directors.

Thus, Board of Directors of Grow More Limited, cannot delegate its power to approve the financial statement to a committee of directors.

Q. 6. Write a Short Note on: True & Fair View

[Dec. 2011 (4 Marks)]

Or

Every financial statement of the company must give true and fair view of the state of affairs of the company at the end of the financial year. [June 2019 (5 Marks)]

Ans. Books of account must give true and fair view [Section 128(1)]: Every company shall prepare and keep at its registered office books of account and other relevant books and papers and financial statement for every financial year which gives true and fair view of the state of the affairs of the company.

Financial statements shall give a true and fair view [Section 129(1)]: The financial statements shall give a true and fair view of the state of affairs of the company.

True and Fair view in respect of financial statement means:

- Financial statements should comply with accounting standards notified u/s 133.
- Financial statement shall be in forms as provided for different class or classes of companies in Schedule III.

(c) In case of financial statement of any insurance or banking company or any company engaged in the generation or supply of electricity or to any other class of company for which a form of financial statement has been specified in or under the Act governing such class of company, shall not be treated as not disclosing a true and fair view of the state of affairs of the company, merely by the reason of the fact that they do not disclose -

- ◆ In the case of an insurance company, any matters which are not required to be disclosed by the Insurance Act, 1938, or the Insurance Regulatory and Development Authority Act, 1999.
- ◆ In the case of a banking company, any matters which are not required to be disclosed by the Banking Regulation Act, 1949.
- ◆ In the case of a company engaged in the generation or supply of electricity, any matters which are not required to be disclosed by the Electricity Act, 2003.
- ◆ In the case of a company governed by any other law for the time being in force, any matters which are not required to be disclosed by that law.

Q. 7. It is not obligatory for every company to preserve its books of account.
Comment. [June 2012 (5 Marks)]

Ans. Preservation of books of accounts [Section 128(5)]: Every company is required to preserve books of accounts along with vouchers of last 8 financial years.

However, if an investigation has been ordered in respect of the company, the Central Government may direct to keep the books of account for longer period.

Thus, it is obligatory for every company to preserve books of accounts for at least 8 financial years.

Q. 8. Where a company has a branch office, whether in India or abroad, the original books of account, records, etc. of the branch office will have to be maintained at the registered office of the company. [June 2013 (5 Marks)]

Ans. As per Section 128(1) of the Companies Act, 2013, in case of branch, books of accounts can be kept at branch. However, proper summarized returns are required to be sent periodically by the branch office to the company at its registered office or the other place where books of account are kept.

Thus, it is incorrect to say that the original books of account, records of the branch office will have to be maintained at the registered office of the company.

Q. 9. Write a Short Note on: Approval and Signing of the balance sheet and profit and loss account. [Dec. 2013 (4 Marks)]

Or

Financial Statement shall be signed only by the Chairperson of the company.
Explain. [June 2015 (4 Marks)]

Ans. Approval and signing of financial statement [Section 134(1)]: The financial statement, including consolidated financial statement, if any, shall be approved by the Board of Directors before they are signed.

The financial statements are signed on behalf of the Board by the following persons:

(a) Chairperson of the company where he is authorized by the Board

Or

(b) Two directors out of which one shall be managing director, if any *and* Chief Executive Officer, Chief Financial Officer, Company Secretary (if they are appointed)

In the case of OPC, the financial statements are signed by only one director, for submission to the auditor for his report.

Q. 10. Prepare a summarized form of statement of profit and loss account of a company as per the Schedule II of the Companies Act, 2013.

[Dec. 2013 (5 Marks)]

Ans.: STATEMENT OF PROFIT AND LOSS

Name of the Company.....

Profit and loss statement for the year ended

(Rupees in.....)

Particulars	Note No.	Current year	Previous year
Revenue from operations			
Other Income			
Expenses:			
Cost of materials consumed			
Purchase of stock-in-trade			
Changes in inventories of finished goods, WIP & stock-in-trade			
Employee benefit expense			
Financial costs			
Depreciation and amortization expense			
Other expenses			
Profit before exceptional & extraordinary items and tax			
Exceptional Items			
Profit before extraordinary items and tax			
Extraordinary Items			
Profit before tax			
Tax Expense:			
(1) Current tax			
(2) Deferred tax			
Profit/(Loss) for the period from continuing operations			
Profit/(Loss) from discontinuing operations			
Tax expense of discounting operations			
Profit/(Loss) for the period			
Earning per equity share:			
(1) Basic			
(2) Diluted			

Q. 11. Mention the importance of 'notes on accounts'. Will it convey meaning to stakeholders? [Dec. 2014 (4 Marks)]

Ans. One of the main objectives of the Annual Accounts of a company is to communicate effectively its strengths and weaknesses. The bare figures encompassing the amounts are not sufficient by themselves to depict and explain the true and fair view of the state of affairs of a company. It has, therefore, become necessary to explain and communicate some of the vital information through 'Notes on Accounts'. By and large the notes on accounts are explanatory. They elucidate the figures in the accounts and explain their significance.

Sometimes, these notes are clarificatory to meet the requirements of law. Whether a particular note is explanatory or clarificatory will depend on the facts in each case and the manner in which it is stated. Notes on accounts form an integral part of the accounts of a company and contain very interesting and vital information.

Contents of notes on accounts: The notes on accounts are intended to clarify and elucidate the financial position of a company as disclosed in its balance sheet and profit and loss account. Generally, the notes on accounts dwell on the following matters:

- ◆ Basis of accounting
- ◆ Significant accounting policies
- ◆ Material changes in the method of accounting
- ◆ Effect of material changes in the method of accounting
- ◆ Method of valuation of fixed assets
- ◆ Method of valuation of trade and other investments
- ◆ Method of providing depreciation
- ◆ Valuation of inventories
- ◆ Treatment of amount spent in foreign currency
- ◆ Any disputed liabilities and claims against the company
- ◆ Any major litigation pending by or against the company
- ◆ Method of providing for retirement and terminal benefits
- ◆ Remuneration paid to managerial personnel and their calculation thereof.

The above list is only illustrative and not exhaustive. There could be many other items in the Books of Accounts which may be required to be explained, clarified or amplified so as to project a true and fair view of the state of affairs of the company.

Q. 12. What are the key features of statement of profit and loss as per Schedule III of the Companies Act, 2013? [June 2015 (3 Marks)]

Ans. According to Section 129 of the Companies Act 2013, all the companies will have to present its financial statements in Schedule III.

The Schedule III has been formulated to keep pace with the changes in the economic philosophy leading to privatization and globalization and consequent desired changes/reforms in the corporate financial reporting practices. It deals with the Form of balance sheet, statement of profit and loss and disclosures to be made therein and it applies uniformly to all the companies for the preparation of financial statements of an accounting year.

It has several new features like:

- ◆ A vertical format for presentation of balance sheet with classification of Balance Sheet items into current and non-current categories.
- ◆ A vertical format of Statement of Profit and Loss with classification of expenses based on nature.
- ◆ Elimination the concept of "Schedules" and such information is now to be furnished in terms of "Notes to Accounts".
- ◆ It does not contain any specific disclosure for items included in Schedule VI under the head, "Miscellaneous Expenditure".
- ◆ Debit Balance of Statement of Profit & Loss A/c will be disclosed under the head, Reserves & Surplus as the negative figure.
- ◆ No change in the format of cash flow statement as per revised schedule and therefore its preparation continue to be as per AS-3 on cash flow statement.
- ◆ It gives prominence to Accounting Standards (AS) *i.e.* in case of any conflict between the AS and the Schedule, AS shall prevail.

Q. 13. State how you would present 'Cash & Cash Equivalents' under the current assets in the balance sheet as per Schedule III of the Companies Act, 2013.

[June 2016 (5 Marks)]

Ans. Cash and cash equivalents are required to be presented as given below as per Schedule III of the Companies Act, 2013:

- (i) Cash and cash equivalents shall be classified as:
 - (a) Balances with banks
 - (b) Cheques, drafts on hand
 - (c) Cash on hand
 - (d) Others (*specify nature*).
- (ii) Earmarked balances with banks (*for example, for unpaid dividend*) shall be separately stated.
- (iii) Balances with banks to the extent held as margin money or security against the borrowings, guarantees, other commitments shall be disclosed separately.
- (iv) Repatriation restrictions, if any, in respect of cash and bank balances shall be separately stated.
- (v) Bank deposits with more than 12 months maturity shall be disclosed separately.

Q. 14. State how you would present 'Short-Term Loans & Advances' under current assets in the balance sheet of a company as per Schedule III of the Companies Act, 2013? [June 2016 (3 Marks)]

Ans. Short-term loans and advances are required to be presented as given below as per Schedule III of the Companies Act, 2013:

- (i) Short-term loans and advances shall be classified as:
 - (a) Loans and advances to related parties (giving details thereof);
 - (b) Others (specify nature).
- (ii) The above shall also be sub-classified as:
 - (a) Secured, considered good
 - (b) Unsecured, considered good
 - (c) Doubtful.
- (iii) Allowance for bad and doubtful loans and advances shall be disclosed under the relevant heads separately.
- (iv) Loans and advances due by directors or other officers of the company or any of them either severally or jointly with any other person or amounts due by firms or private companies respectively in which any director is a partner or a director or a member shall be separately stated.

Q. 15. Vibgyor Ltd. is unaware of the manner and details of presentation of 'Long-Term Loans & Advances' to be given in the balance sheet as per Schedule III of the Companies Act, 2013. Advise the company with the contents and manner of its disclosure. [June 2016 (5 Marks)]

Ans.: Long-term loans and advances are required to be presented as given below as per Schedule III of the Companies Act, 2013:

- (i) Long-term loans and advances shall be classified as:
 - (a) Capital Advances
 - (b) Security Deposits
 - (c) Loans and advances to related parties (giving details thereof);
 - (d) Other loans and advances (specify nature).
 - (ii) The above shall also be separately sub-classified as:
 - (a) Secured, considered good
 - (b) Unsecured, considered good
 - (c) Doubtful.
 - (iii) Allowance for bad and doubtful loans and advances shall be disclosed under the relevant heads separately.
- Loans and advances due by directors or other officers of the company or any of them either severally or jointly with any other persons or amounts due by firms or private companies respectively in which any director is a partner or a director or a member should be separately stated.

**Q. 16. What are the fundamental characteristics of Corporate Financial Reporting?
[June 2019 (5 Marks)]****Ans. Characteristics of Corporate Financial Reporting:**

- (a) **Relevance:** Information is relevant when it influences the economic decisions of users by helping them to evaluate past, present, and future events to confirm/correct their past evaluations. The relevance of information is affected by its nature and materiality (which is always the threshold for relevance). Information overload, on the other hand, can obfuscate information, making it hard to sift through the relevant nuggets and making interpretation difficult.
- (b) **Reliability:** Information should be free from material errors and bias. The key aspects of reliability are faithful representation, priority of substance over form, neutrality, prudence, and completeness.
- (c) **Comparability:** Information should be presented in a consistent manner over time and a consistency is maintained between entities to enable users to make significant comparisons.
- (d) **Understandability:** Information should be readily understandable by users who are expected to have a reasonable knowledge of business, economics and accounting and a willingness to study the information with reasonable diligence. The process of producing useful information includes a number of decision points, which may constrain the amount of information provided. These include:
- (i) **Timelines:** A delay in reporting may improve reliability at the cost of relevance.
 - (ii) **Benefit v. Cost:** Benefits derived from information should normally exceed the cost of providing it.
 - (iii) **Balancing of qualitative characteristics:** To meet the objectives of financial statements and make them adequate for a particular environment, providers of information must achieve an appropriate balance among qualitative characteristics. The aim is to achieve a balance among characteristics in order to meet the objective of financial statements.

Q. 17. Explain the disclosure requirement as per Schedule III of the Companies Act, 2013 with respect to "Short-term Borrowings". [Dec. 2019 (5 Marks)]

Ans. Disclosure requirements of short-term borrowings: Following are the disclosure requirements of short-term borrowings as per the Companies Act, 2013.

- (i) Short-term borrowings shall be classified as:
- (a) Loans repayable on demand
 - From banks
 - from other parties
 - (b) Loans and advances from subsidiaries/holding company/associates/business ventures
 - (c) Deposits
 - (d) Other loans and advances (specify nature)
- (ii) Borrowings shall further be sub-classified as secured and unsecured. Nature of security shall be specified separately in each case.

- (iii) Where loans have been guaranteed by directors or others, a mention thereof shall be made and also the aggregate amount of loans under each head.
- (iv) Period and amount of default in repayment of dues, providing break-up of principal and interest shall be specified separately in each case.

Q. 18. Explain the disclosures requirements as per Schedule III of Companies Act, 2013 with regards to "Reserves and Surplus" and "Long-term Borrowings".
[Dec. 2020 (5 Marks)]

Ans.

Disclosure requirement as per Schedule III of the Companies Act, 2013 are as follow:

Reserves & Surplus:

1. Reserves and surplus shall be classified as:

- (i) Capital Reserves
 - (ii) Capital Redemption Reserves
 - (iii) Securities Premium Reserves
 - (iv) Debenture Redemption Reserves
 - (v) Revaluation Reserves
 - (vi) Share Options Outstanding Account
 - (vii) Other Reserves - (Specify the nature of each reserve)
 - (viii) Surplus i.e. balance in statement of Profit & Loss disclosing allocations and appropriations such as dividend paid, bonus shares and transfer to/from reserves (Additions and deductions since last balance sheet to be shown under each of the specified heads)
2. A reserve specifically represented by earmarked investments shall be termed as a 'fund'.
3. Debit balance of Statement of Profit and Loss shall be shown as a negative figure under the head 'Surplus'. Similarly, the balance of "Reserves and Surplus", after adjusting negative balance of surplus, if any, shall be shown under the head "Reserves and Surplus" even if the resulting figure is in the negative.

Long - term Borrowings:

1. Long-term borrowings shall be classified as:

- (i) Bonds/debentures
 - (ii) Term Loans - from banks/from other parties.
 - (iii) Deferred payment liabilities
 - (iv) Deposits
 - (v) Loans and advances from related parties
 - (vi) Long-term maturities of finance lease obligations
 - (vii) Other loans and advances (specify nature)
2. Borrowings shall further be sub-classified as secured and unsecured. Nature of security shall be specified separately in each case.

3. Where loans have been guaranteed by directors or others, the aggregate amount of such loans under each head shall be disclosed.
4. Bonds/debentures (along with the rate of interest and particulars of redemption or conversion, as the case may be) shall be stated in descending order of maturity or conversion, starting from farthest redemption or conversion date, as the case may be. Where bonds/debentures are redeemable by instalments, the date of maturity for this purpose must be reckoned as the date on which the first instalment becomes due.
5. Particulars of any redeemed bonds/debentures which the company has power to reissue.
6. Terms of repayment of term loans and other loans shall be stated.
7. Period and amount of default in repayment of dues, providing break-up of principal and interest shall be specified separately in each case.

Q. 19. Books of account have to be kept only at the registered office of the company. As a corporate consultant give your comments in this regard.

[June 2021 (3 Marks)]

Ans. Place at which books of accounts should be kept [Section 128(1)]: Every company shall prepare and keep books of account and other relevant books and papers and financial statement at its registered office.

In case of branch, books of accounts can be kept at branch. However, proper summarized returns are required to be sent periodically by the branch office to the company at its registered office or the other place where books of accounts are kept.

All or any of the books of account and other relevant papers may be kept at such other place in India as the Board of Directors may decide and where such a decision is taken, the company shall, within 7 days thereof, file with the Registrar a notice in writing giving the full address of that other place.

As per Rule 2A of the Companies (Accounts) Rules, 2014, the notice regarding address at which books of account may be kept shall be in **Form AOC-5**.

Q. 20. Give two examples on each of the following items:

- (i) Change in accounting estimate
- (ii) Extra-ordinary items
- (iii) Prior period items

[June 2021 (3 Marks)]

Ans.

(i) **Example of change in accounting estimates:**

- (a) Changes in estimate of provision for doubtful debts on sundry debtors.
- (b) Changes in estimate of useful life of fixed assets.

(ii) **Example of extra-ordinary items:**

- (a) Loss due to earthquake/fire/flood/strike etc.
- (b) Attachment of property of the company by the government.

(iii) Example of prior period items:

- (a) Applying incorrect rate of depreciation in one or more prior period.
 (b) Omission to account for income or expenditure in one or more prior period.

Q. 21. ABC Ltd. has not satisfied any conditions specified as per section 137 of the Companies Act for current financial year. The company has filed financial statement as per XBRL Taxonomy for the previous financial year. Is ABC Ltd. still required to file financial statements as per XBRL Taxonomy for the current financial year?
 [Dec. 2021 (3 Marks)]

Ans. Filing of financial statements with Registrar in XBRL Format: As per Rule 3(1) of the Companies (Filing of Documents & Forms in Extensible Business Reporting Language) Rules, 2015, following class of companies shall file their financial statements and other documents under section 137 with the Registrar in Form AOC-4 XBRL as per Annexure-I.

- (1) Companies listed with any Stock Exchange in India and their Indian subsidiaries
- (2) Companies having paid-up capital of ₹5 Crore or above.
- (3) Companies having turnover of ₹100 Crore or above.
- (4) Companies which are required to prepare their financial statements in accordance with the Companies (Indian Accounting Standards) Rules, 2015.

As per Rule 3(2), the companies which have filed their financial statements under Rule 3(1) shall continue to file their financial statements and other documents though they may not fall under the class of companies specified therein in succeeding years.

ABC Ltd. has filed financial statement as per XBRL Taxonomy for the previous financial year and hence it must continue to file its financial statement as per XBRL Taxonomy for succeeding years.

PROBLEMS & SOLUTIONS

Problem No. 1] Jupiter Ltd. issued 10,000 equity shares at ₹20 per share for cash and 20,000 equity shares to suppliers of plant costing ₹4,50,000. Assuming face value of shares at ₹10 each, show the resultant disclosure in the notes to accounts attached to balance sheet as per Schedule III of the Companies Act, 2013.
 [Dec. 2016 (5 Marks)]

Ans.: Notes to Accounts of Jupiter Ltd.:

Share Capital		
Authorized Capital		
Issued Capital		
Equity Share Capital		
- 30,000 equity shares of ₹10 for cash		3,00,000
Subscribed Capital		
- 10,000 equity shares of ₹10 for cash	1,00,000	
- 20,000 equity shares of ₹10 for consideration other than cash	2,00,000	3,00,000

Reserve & Surplus		
<u>Securities Premium</u>		
- Received in cash (10,000 × 10)	1,00,000	
- For consideration other than cash (20,000 × 12.5)	2,50,000	3,50,000

Problem No. 2] Following information has been obtained from Guru Ltd. for the year ending 31st March, 2018:

(1) Authorized, Issued and Subscribed Capital:

200 lakh Equity Shares of ₹10 each, out of which 100 lakh shares were issued as fully paid-up, 48 lakh shares were ₹8 each called-up and paid-up and 1.50 lakh shares were ₹8 called-up but calls-in-arrear thereon of ₹3 lakh.

(2) Following are balances of some accounts:

— Capital Reserve	₹150 lakh
— General Reserve	₹40 lakh
— Securities Premium	₹130 lakh
— Statement of Profit & Loss (Dr.)	₹115 lakh
— Forfeited Shares	₹2 lakh

You are required to prepare relevant notes to the accounts for the year ended 31st March, 2018 as per Schedule III of the Companies Act, 2013. [Dec. 2018 (3 Marks)]

Ans.

Notes to Accounts of Guru Ltd.:

1. Share Capital

Particulars	₹ in lakh
Authorized Capital	2,000
Issued, Subscribed & Paid-up Capital	
Equity Share Capital	
- 100 lakh equity shares of ₹10	1,000
- 48 lakh equity shares of ₹8 paid-up	384
- 1.5 lakh equity shares of ₹8 paid-up [1.5 × 8 - 3]	9
Forfeited Shares	2
	1,395

2. Reserve & Surplus

Particulars	₹ in lakh
Capital Reserve	150
General Reserve	40
Securities Premium	130
Statement of Profit & Loss (Dr.)	(115)
	205

Problem No. 3] Following information is extracted from the Balance Sheet of Chika Ltd. as at 31st March, 2019:

Name of Account	(₹ in lakh)
Term Loans	250
Capital Redemption Reserve	210
Unpaid Dividends	21
Securities Premium Reserve	115
Deferred Tax Liabilities	65
Interest Received in Advance	10
Statement of Profit & Loss (Debit)	118
Loans repayable on demand	32
9% Debentures	400

You are required to make the presentation of above information in the Relevant notes to the accounts for the year ended as at 31st March, 2019 as per Schedule III of the Companies Act, 2013. The Relevant Notes should be related to:

- (1) Reserves and surplus
- (2) Non-current liabilities
- (3) Current liabilities

[June 2019 (3 Marks)]

Ans.

Notes to Accounts of Chika Ltd.:

1. Reserve & Surplus:

Particulars	₹ in lakh
Capital Redemption Reserve	210
Securities Premium Reserve	115
Statement of Profit & Loss (Debit)	(118)
	207

2. Non-Current Liabilities:

Particulars	₹ in lakh
Term Loans	250
Deferred Tax Liabilities	65
9% Debentures	400
	715

3. Current Liabilities:

Particulars	₹ in lakh
Unpaid Dividends	21
Interest Received in Advance	10
Loans repayable on demand	32
	63

Problem No. 4] R Ltd. was incorporated with an authorized capital of ₹4,00,00,000 consisting of 20,00,000 equity shares of ₹10 each and 2,00,000, 8% preference shares of ₹100 each. Other details were as follows:

Issued, Subscribed and Paid-up Capital:

10,00,000 Equity Shares of ₹10 each

1,00,000, 8% Preference Shares of ₹ 100 each

	₹
	1,00,00,000
	1,00,00,000
	2,00,00,000

The Statement of Profit and Loss of the Company for the year ended 31st March, 2020 showed net profit before tax ₹60,00,000. The net profit brought forward from previous year's Balance Sheet amounted to ₹12,00,000. The Company makes a provision of 30% for income tax. The dividend distribution tax rate (including Surcharge & Cess) is 17.304%.

Following appropriation was proposed by the company:

- (a) To pay dividend on preference shares.
- (b) To pay final dividend @ 20% to equity shareholders.
- (c) To transfer to general reserve ₹4,20,000.

You are required to show the relevant items in the Balance Sheet. (Showing details in the 'Notes to Accounts') [June 2021 (5 Marks)]

Ans.

Balance Sheet of R Ltd. [Extract]

As on 31st March, 2020

Particulars	Note No.	Amount (₹)
EQUITY AND LIABILITIES		
(1) Shareholders Funds:		
(a) Share Capital	1	2,00,00,000
(b) Reserve and Surplus	2	21,15,488
(2) Current Liabilities:		
(a) Short-term Provisions	3	50,84,512
Total		2,72,00,000

Statement showing appropriation of profit:

Particulars	Amount (₹)
Profit before tax for the year 2019-20	60,00,000
(-) Income-tax @ 30%	(18,00,000)
Profit after tax	42,00,000
(-) Appropriations:	
- Preference Dividend [1,00,00,000 × 8%]	(8,00,000)
- Equity Dividend [1,00,00,000 × 20%]	(20,00,000)
- Dividend Distribution Tax [28,00,000 × 17.304%]	(4,84,512)
- Transfer to General Reserve	(4,20,000)
Net Profit	4,95,488

Notes to Accounts of R Ltd.:

1. Share Capital:

Particulars	Amount (₹)
<i>Authorized Capital:</i>	
20,00,000 Equity Shares of ₹10 each	2,00,00,000
2,00,000 8% Preference Shares of ₹100 each	2,00,00,000
	4,00,00,000
<i>Issued, Subscribed & Paid-up Capital:</i>	
10,00,000 Equity Shares (₹10 each fully paid-up)	1,00,00,000
1,00,000 8% Preference Shares (₹100 each fully paid-up)	1,00,00,000
	2,00,00,000

2. Reserve & Surplus:

Particulars	Amount (₹)
Profit carried brought forward from last year	12,00,000
Net Profit	4,95,488
General Reserve	4,20,000
	21,15,488

3. Short-term Provisions:

Particulars	Amount (₹)
(i) Proposed Dividend	
(a) Preference Dividend	8,00,000
(b) Equity Dividend	20,00,000
(ii) Dividend Distribution Tax	4,84,512
(iii) Provision for Taxation	18,00,000
	50,84,512

Problem No. 5] State how you will treat the following transaction while preparing the final accounts of a company for the year ending 31st March, 2020.

- Subsidy ₹2,50,000 received from Government for installing a factory in backward area.
- The market value of the quoted investment is ₹3,00,000 as against the cost of ₹2,75,000.
- While preparing the accounts of the previous year closing stock was taken at market price of ₹4,55,000 instead of cost price of ₹4,80,000.

[June 2021 (3 Marks)]

Ans.

- Subsidy ₹2,50,000 received from Government for installing a factory in backward area should be shown as a capital reserve or as a deduction from the cost of the asset.
- The market value of the quoted investment is ₹3,00,000 as against the cost of ₹2,75,000. Disclose the market value in the balance sheet, no provision need to be made for the fall in the value.

- (iii) No treatment is required to be made. The method of valuation of stock is to be disclosed in the Balance Sheet.

Problem No. 6] Following items were extracted from the Balance Sheet of Z Ltd. as on 1-4-2019:

Particulars	(₹)
Equity share capital fully paid-up	12,00,000
12% Preference share capital	5,00,000
Securities premium	6,00,000
13% Debentures	9,00,000

- Profit before interest and tax is ₹12,00,000 for the year ended 31-3-2020.
- The Board of Directors of the company declares a dividend of 15% on equity capital on 31-3-2020.
- The Company also decided to transfer for creation of general reserve @ 5% of net profit.
- Tax rate is 30%.

Pass necessary journal entries to incorporate the Board's recommendation.

[June 2021 (3 Marks)]

Ans.

In the books of Z Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Profit & Loss A/c To Debenture Interest A/c (Being, transfer of debenture interest to profit and loss account)	Dr. 1,17,000	1,17,000
	Profit & Loss A/c To Provision For Taxation A/c (Being, provision for tax @ 30% made on profit after interest) [(12,00,000 - 1,17,000) × 30%]	Dr. 3,24,900	3,24,900
	Profit & Loss A/c To General Reserve A/c (Being, transfer to general reserve) [(12,00,000 - 1,17,000 - 3,24,900) × 5%]	Dr. 37,905	37,905
	Profit & Loss A/c To Preference Dividend A/c (Being, preference dividend payable @ 12% on ₹5,00,000)	Dr. 60,000	60,000
	Profit & Loss A/c To Equity Dividend A/c (Being, equity dividend payable @ 15% on ₹12,00,000)	Dr. 1,80,000	1,80,000

3

CHAPTER

ACCOUNTING STANDARDS

COMPANIES (ACCOUNTING STANDARD) RULES, 2021

Q. 1. Define "Small and Medium Sized Company" as defined in the Companies (Accounting Standards) Rules, 2021.

Ans. Small & Medium Sized Company [Rule 2(e)]: Small and Medium Sized Company (SMC) means, a company –

- (i) Whose equity or debt securities are not listed or are not in the process of listing on any stock exchange, whether in India or outside India.
- (ii) Which is not a bank, financial institution or an insurance company.
- (iii) Whose **turnover** (*excluding other income*) does not exceed ₹ 250 Crore in the immediately preceding accounting year.
- (iv) Which does not have **borrowings** (*including public deposits*) in excess of ₹ 50 Crore at any time during the immediately preceding accounting year.
- (v) Which is not a holding or subsidiary company of a company which is not SMC.

Explanation: A company shall qualify as SMC, if the conditions mentioned therein are satisfied as at the end of the relevant accounting period.

ACCOUNTING STANDARDS

Q. 2. Write a short note on: Significance of Accounting Standards
[June 2005 (4 Marks)], [Dec. 2005 (5 Marks)]

Or

Write a short note on: Objectives of accounting standards
[Dec. 2008 (3 Marks)], [Dec. 2017 (5 Marks)]

Ans. Objectives of accounting standards are as follows:

- (i) To harmonize different accounting policies and practices use in a country.
- (ii) To standardize accounting methods and procedures.
- (iii) To reduce the accounting alternatives in the preparation of financial statements
- (iv) To lay down principles for preparation and presentation.
- (v) To establish benchmark for evaluating the quality of financial statements.

- (vi) To ensure the users of financial statements get creditable financial information.
 (vii) To attain international levels in the related areas.

Accounting Standards reduce to a considerable extent or eliminate altogether wide variation in the accounting treatments used to prepare and present financial statements. Thus, the basic objective of an Accounting Standard is to harmonize the diverse accounting practices followed in the preparation and presentation of financial statements so as to facilitate intra-firm comparison.

Consider the following example:

Particulars	A Ltd.	B Ltd.
Profits before depreciation	₹10 Crore	₹10 Crore
Gross Block	₹10 Crore	₹10 Crore
Net Block	₹9 Crore	₹9 Crore
Depreciation method	SLM	WDV
Depreciation rate	10%	10%
Depreciation amount	₹1 Crore	₹90 Lakh
Profits after depreciation	₹9 Crore	₹9.10 Crore

Thus, the profits of A Ltd. are lower by ₹10 Lakh as compared to B Ltd., because of the depreciation method followed. Similarly, a change in an accounting policy, over a period of time, by an enterprise renders intra-firm comparison a meaningless exercise.

Q. 3. Write a short note on: Generally Accepted Accounting Principles (GAAP)
 [Dec. 2005 (4 Marks)]

Ans. GAAP refer to the standard framework of guidelines for financial accounting used in any given jurisdiction; generally known as accounting standards.

GAAP includes the standards, conventions, and rules accountants follow in recording and summarizing, and in the preparation of financial statements.

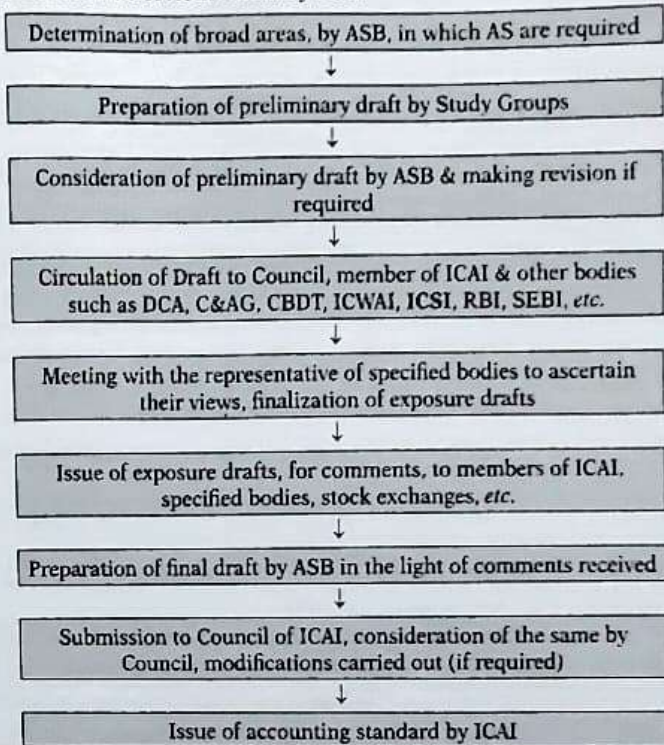
Indian GAAP is nothing but a set of accounting standards that every company operating in India has to follow when reporting its financial results. Generally Acceptable Accounting Standards differ for each country as they incorporate policies and procedures that have to be followed for financial disclosures as per the standards set in each country. ICAI is the body in India that has set the Accounting standards that need to be followed while financial reporting, all CAs, its members, are an integral part of the corporate in India have the responsibility to report and furnish the financial results as per the set standards.

So Indian Accounting Standards are termed as Indian GAAP. While US has its own set of accounting Standards termed as US GAAP; a non-US company when presenting its financial results in US has to follow US GAAP.

This helps in that all companies follow uniform procedure in financial disclosures which are widely acceptable and followed in the country.

Q. 4. What is the procedure for issue of Accounting Standard in India by ICAI?
 [Dec. 2006 (5 Marks)]

Ans. Procedure for issue of AS in India by ICAI:



Q. 5. "Accounting standards are formulated in conformity with the provisions of the applicable laws, customs, usages and business environment of a country."

Comment.

[June 2008 (5 Marks)]

Or

"Accounting Standards are mandatory for all companies." **Comment.**

[Dec. 2009 (3 Marks)]

Ans. Accounting standards issued by the ICAI have legal recognition through the Companies Act, 2013.

The Companies Act, 2013 makes following provisions relating to compliance of Accounting Standards:

- (1) The financial statements of every company shall comply with the Accounting Standards. [Section 129(1)]
- (2) Where the Profit & Loss Account and the balance sheet do not comply with the Accounting Standards, such companies shall disclose, the following:
 - (a) Deviation from the Accounting Standards.
 - (b) Reasons for such deviation.
 - (c) Financial effect due to such deviation. [Section 129(5)]

- (3) The Board's report shall also include a Directors Responsibility Statement indicating therein that in preparation of annual accounts, the applicable Accounting Standards had been followed along with proper explanation relating to material departure. [Section 134(5)]
- (4) The auditor's report shall also state whether, in his opinion, the Profit & Loss Account and the balance sheet comply with Accounting Standards. Where answer to above is negative or with qualification, it shall also state the reasons thereof.

Q. 6. State the objectives of the Accounting Standards Board.

[Dec. 2013 (3 Marks)], [June 2018 (5 Marks)]

Ans. Recognizing the need to harmonize the diverse accounting policies and practices at present in use in India and keeping in view the International developments in the field of accounting, the Council of the ICAI constituted the Accounting Standards Board (ASB) in April, 1977.

Following are the objectives of the Accounting Standards Board:

- To conceive of and suggest areas in which Accounting Standards need to be developed.
- To formulate Accounting Standards with a view to assisting the Council of the ICAI in evolving and establishing Accounting Standards in India.
- To examine how far the relevant IFRS can be adapted while formulating the Accounting Standard and to adapt the same.
- To review, at regular intervals, the Accounting Standards from the point of view of acceptance or changed conditions and if necessary, revise the same.
- To provide, from time to time, interpretations and guidance on Accounting Standards.
- To carry out other functions relating to Accounting Standards.

Q. 7. State the functions of National Financial Reporting Authority to provide for matters relating to accounting and auditing standards. [June 2016 (3 Marks)]

Ans. Constitution of National Financial Reporting Authority [Section 132(1)]: The Central Government may, by notification, constitute a National Financial Reporting Authority (NFRA) to provide for matters relating to accounting and auditing standards under Companies Act, 2013.

Functions of NFRA [Section 132(2)]: Functions of the National Financial Reporting Authority are as follows:

- To make recommendations to the Central Government on the formulation and laying down of accounting and auditing policies and standards for adoption by companies or class of companies or their auditors
- To monitor and enforce the compliance with accounting standards and auditing standards
- To oversee the quality of service of the professions associated with ensuring compliance with such standards, and suggest measures required for improvement in quality of service and other related prescribed matters
- To perform such other functions relating to clauses (a), (b) and (c) as may be prescribed.

Q. 8. What are the disclosure requirements with regard to 'Significant Accounting Policies'?
[June 2017 (5 Marks)]

Ans. To ensure proper understanding of financial statements, it is necessary that all significant accounting policies adopted in the preparation and presentation of financial statements should be disclosed. Such disclosure should form part of the financial statements. It would be helpful to the reader of financial statements if they are all disclosed as such in one place instead of being scattered over several statements, schedules and notes.

In respect of reporting of accounting policies, company need to follow following principles.

1. All significant accounting policies adopted in the preparation and presentation of financial statements should be disclosed.
2. The disclosure of the significant accounting policies should form part of the financial statements and should be normally disclosed at one place.
3. Any change in the accounting policies which has a material effect in the current period or which is reasonably expected to have a material effect in later periods should be disclosed. In the case of a change in accounting policies which has a material effect in the current period, the amount by which any item in the financial statements is affected by such change should also be disclosed to the extent ascertainable. Where such amount is not ascertainable, wholly or in part, the fact should be indicated.
4. If the fundamental accounting assumptions, viz. Going Concern, Consistency and Accrual are followed in financial statements, specific disclosure is not required. If a fundamental accounting assumption is not followed, the fact should be disclosed.

IFRS

Q. 9. Discuss the roadmap for implementation of Indian Accounting Standards (Ind AS) to achieve convergence with IFRS.

Ans. The MCA, in 2015, had notified the Companies (Indian Accounting Standards (IND AS) Rules 2015, which stipulated the adoption and applicability of Ind AS in a phased manner beginning from the Accounting period 2016-2017.

Roadmap for implementation of Indian Accounting Standards (Ind AS):

- (i) **For accounting period beginning on or after 1st April, 2016:** Following companies shall comply with the Ind AS:
 - (a) Companies whose equity or debt securities are listed or are in the process of listing on any stock exchange either in India or out of India and having the net worth of ₹500 Crore or more.
 - (b) Unlisted companies having the net worth of ₹500 Crore or more.
 - (c) Holding companies, subsidiary companies, joint venture or associate companies of the companies mentioned at (a) or (b) above.
- (ii) **For accounting period ending on or after 1st April, 2017:** Following companies shall comply with the Ind AS:
 - (a) Listed companies having net worth of less than ₹500 Crore.

- (b) Unlisted companies having net worth of ₹250 Crore or more but less than ₹500 Crore.
- (c) Holding, subsidiary, joint venture and associate companies of the companies mentioned at or (b) above.

Once a company starts applying Ind ASs for the preparation of the financial statements based on the mandatory criteria specified above, it will have to prepare the financial statements in compliance with the Ind ASs for all the subsequent years even if the criteria later on does not apply to it.

A company may voluntarily apply the Ind ASs for the preparation of the financial statements for the accounting period starting on or after 1st April, 2015. However, such a company cannot subsequently revert back to the preparation of financial statements by adopting the Accounting Standards specified under the Companies (Accounting Standards) Rules, 2015.

Q. 10. Explain: Features of International Financial Reporting Standards.

Ans. Features of International Financial Reporting Standards (IFRS) are:

1. Single set of Accounting Standards based on fair value that would enable internationally to standardize and assure better quality on a global screen.
2. It would also permit international capital to flow more freely, enabling companies to develop consistent global practices on accounting problems.
3. It would be beneficial to the regulators too, as the complexity associated with the understanding of various reporting regimes would be reduced.
4. For investors, it gives a better understanding to the financial statements and assess the investment opportunities available in foreign countries other than their home country.
5. It also benefits the accounting professionals in a way that they will be able to sell their services in the different parts of world.

PROBLEMS & SOLUTIONS

Problem No. 1] Jeevan Ltd. earned a net profit after tax of ₹90,00,000 during the year ended 31.3.2012. The company's equity capital is 10,000 shares of ₹10 each. The company has also issued 5,000, 20% convertible debentures of ₹20 each convertible into shares at par. Compute the basic EPS and diluted EPS as per AS 20, assuming income tax rate at 30%. [June 2014 (3 Marks)]

Ans.

Calculation of EPS:

$$\begin{aligned} \text{EPS} &= \frac{\text{Profit available for equity shareholder}}{\text{Weighted average number of shares}} \\ &= \frac{90,00,000}{10,000} \\ &= 900 \end{aligned}$$

Calculation of diluted EPS:

Net profit for the current year	90,00,000
(+) Saving in interest expenses due conversion of debenture in to shares	20,000
(-) Increase in tax due saving in interest expenses (20,000 × 30%)	(6,000)
Adjusted net profit	90,14,000

No. of shares before conversion of debenture in to equity shares	10,000
Additional equity shares due to conversion of debentures (5,000 × 20)/10	10,000
Adjusted shares after conversion of debenture in to shares	20,000

$$\begin{aligned} \text{Diluted EPS} &= \frac{\text{Adjusted net profit}}{\text{Adjusted shares}} \\ &= \frac{90,14,000}{20,000} \\ &= 450.70 \end{aligned}$$

Problem No. 2] From the following information, calculate diluted earnings per share (EPS) of the company:

Net profit for the current year	₹ 83,00,000
Number of equity shares outstanding	20,00,000
Number of 10% convertible debentures of ₹ 100 each (Each debenture is convertible into 10 equity shares)	1,00,000
Interest expense for the current year	₹ 10,00,000
Tax relating to interest expenses	30%

[Dec. 2015 (3 Marks)]

Ans.

Calculation of EPS:

$$\begin{aligned} \text{EPS} &= \frac{\text{Profit available for equity shareholders}}{\text{Weighted average number of shares}} \\ &= \frac{83,00,000}{20,00,000} \\ &= 4.15 \end{aligned}$$

Calculation of diluted EPS:

Net profit for the current year (after tax)	83,00,000
(+) Saving in interest expenses due conversion of debentures in to equity shares	10,00,000
(-) Increase in tax due saving in interest expenses (10,00,000 × 30%)	(3,00,000)
Adjusted net profit	90,00,000

No. of shares before conversion of debenture in to shares	20,00,000
Additional equity shares due to conversion of debentures (1,00,000 × 10)	10,00,000
Adjusted shares after conversion of debenture in to shares	30,00,000

$$\text{Diluted EPS} = \frac{\text{Adjusted net profit}}{\text{Adjusted shares}}$$

$$= \frac{90,00,000}{30,00,000}$$

$$= 3.00$$

4

CHAPTER

ACCOUNTING FOR SHARE CAPITAL

UNIT I : ISSUE OF EQUITY SHARES

THEORETICAL QUESTIONS

Q. 1. In case of under subscription of shares, question of returning the money does not arise at all. [Dec. 2008 (3 Marks)]

Ans. Minimum Subscription: As per Regulation 24 of the SEBI (ICDR) Regulations, 2018, the minimum subscription to be received in the issue shall be at least 90% of the offer through the offer document, except in case of an offer for sale of specified securities.

In the event of non-receipt of minimum subscription, all application monies received shall be refunded to the applicants forthwith, but not later than **4 days** from the closure of the issue.

Q. 2. Write a short note on: Issue of shares at discount [June 2009 (3 Marks)]

Ans. Prohibition on issue of shares at discount [Section 53]: Except as provided in Section 54 [issue of sweat equity shares], a company shall not issue shares at a discount.

Any share issued by a company at a discount price shall be void.

However, a company may issue shares at a discount to its creditors when its debt is converted into shares in pursuance of any statutory resolution plan or debt restructuring scheme in accordance with any guidelines or directions or regulations specified by the RBI under the Reserve Bank of India Act, 1934 or the Banking (Regulation) Act, 1949.

Penalty: Where any company fails to comply with the provisions of this section, such company and every officer who is in default shall be liable to a penalty which may extend to an amount equal to the **amount raised through the issue of shares at a discount or ₹ 5 lakh, whichever is less.**

The company shall also be liable to refund all monies received with **Interest** at the rate of **12% p.a.** from the date of issue of such shares to the persons to whom such shares have been issued.

Q. 3. Distinguish between: Calls-in-Advance & Calls-in-Arrear [Dec. 2008 (3 Marks)]

Ans. Following are the main points of distinction between calls-in-advance & calls-in-arrear:

Points	Calls-in-Advance	Calls-in-Arrear
Meaning	A company may receive from a shareholder the amount remaining unpaid on shares. This is known as calls-in-advance.	When calls are made upon shares allotted, the shareholders holding the shares are bound to pay the call money within the date fixed for such payment. If a shareholder makes a default in sending the call money within the appointed date, the amount thus failed is called calls-in-arrear.
Interest	Regulation 18 of Table F of the Companies Act, 2013 provides that the Board may receive from any member calls in advance and may pay interest at such rate not exceeding 12% p.a. The Company is liable to pay interest on the amount of calls-in-advance from the date of receipt of the amount till the date when the call is due for payment.	Regulation 16 of Table F of the Companies Act, 2013 provides that, if a call is not paid before or on the day appointed for payment, the shareholder shall pay interest from the day appointed for payment to the time of actual payment at 10% p.a. or at such lower rate, as the Board may determine.
Nature	Interest on calls-in-advance is expenses and debited to profit & loss account.	Interest on calls-in-arrear is income and credited to profit & loss account.

Q. 4. Write a short note on: Lien on a share [June 2011 (3 Marks)]

Ans. Lien means to withhold the property of another for the lawful debts. It is equitable charge on the shares to secure any debts due from member of the company.

As per Table F to the Companies Act, 2013, the company shall have a first and paramount lien:

- On every share (not being a fully paid share), for all monies (whether presently payable or not) called, or payable at a fixed time, in respect of that share.
- On all shares (not being fully paid shares) standing registered in the name of a single person, for all monies presently payable by him or his estate to the company.

The Board of directors may at any time declare any share to be wholly or in part exempt from the provisions of this clause.

The company's lien, if any, on a share shall extend to all dividends payable and bonuses declared from time to time in respect of such shares.

Lien never involves a reduction of capital because the shares are sold if the member makes defaults in payments.

Q. 5. What do you understand by 'issue of shares at premium'. State the purposes for which balance in the securities premium account may be applied.

[Dec. 2013 (5 Marks)], [June 2015 (5 Marks)],
[June 2016 (3 Marks)], [Dec. 2017 (5 Marks)]

Ans. A company may issue securities at a premium when it is able to sell them at a price above face value. The Companies Act, 2013, does not stipulate any conditions or restrictions regulating the issue of securities by a company at a premium. However, it imposes conditions regulating the utilization of the amount of premium collected on securities.

Securities Premium Account [Section 52(1)]: Where a company issues shares at a premium, whether for cash or otherwise, a sum equal to the aggregate amount of the premium received on those shares shall be transferred to a "securities premium account" and the provisions of the Act relating to reduction of share capital of a company shall, except as provided in this section, apply as if the securities premium account were the paid-up share capital of the company.

Conditions relating to utilization of securities premium [Section 52(2)]: Securities premium can be used by the company for the following purposes:

- Issuing fully paid bonus shares.
- Writing off the preliminary expenses.
- Writing off commission or discount or the expenses on issue of shares or debentures.
- Writing off premium on redemption of redeemable preference shares or debentures.
- Buy-back of face value of shares and writing off premium on buy-back.

Conditions relating to utilization of securities premium in case of prescribed class of companies [Section 52(3)]: In case of prescribed class of companies whose financial statement comply with the accounting standards prescribed under section 133, securities premium account can be used for the following purposes:

- Issuing fully paid-up bonus shares.
- Writing off expenses or commission or discount on any issue of equity shares.
- Buy-back of face value of shares and writing off premium on buy-back.

Q. 6. Distinguish between: Securities Premium & Share Premium

[June 2014 (3 Marks)]

Ans. Securities premium account is a broader term than share premium. Share premium account balance represents only premium on issue of equity and preference shares whereas securities premium account balance represents premium on issue of shares, debentures, bonds and other financial instruments.

PROBLEMS & SOLUTIONS

Problem No. 1] Alex Ltd. forfeited 100 shares of ₹10 each issued at a premium of 20% (to be paid at the time of application money) on which allotment money of ₹4 and first call money of ₹3 were not received; the final call money of ₹2 is not yet called.

These shares were originally allotted in the ratio of 4:5. These shares were subsequently re-issued at a discount of ₹1 per share, credited as ₹8 paid-up.

Pass journal entries in the books of Alex Ltd.

[June 2011 (3 Marks)]

Ans.:

Application	(1 + 2)	3
Allotment		4
First call		3
Final call		2
		<u>12</u>

In the books of Alex Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Share Capital A/c (100 × 8) To Share Forfeited A/c (100 + 75) or (375 - 200) To Share Allotment A/c [(100 × 4) - **75] To Share First Call A/c (100 × 3) (Being, 100 shares forfeited for non-payment of allotment and first call as per Boards Resolution No.... dated) <p><i>Note: Share Capital A/c will be debited by called up amount. Securities premium account will not be debited as it is received and it will be deducted while calculating amount to be credited to Share Forfeiture A/c</i></p>	Dr. 800	* 175 325 300
	Bank A/c (100 × 7) Share Forfeited A/c (100 × 1) To Share Capital A/c (100 × 8) (Being, re-issue of 200 forfeited shares @ ₹7 per shares at ₹8 paid up and discount on re-issue debited to share forfeited account)	Dr. 700 Dr. 100	800
	Share Forfeited A/c (175 - 100) To Capital Reserve A/c (Being, balance in share forfeiture account transferred to capital reserve account)	Dr. 75	75

Shares applied	Shares allotted	Application money received	Application money appropriated towards					Refund
			Application		Allotment	First call	Final call	
			Capital	Premium				
125	100	375	* 100	200	** 75	-	-	-

Problem No. 2) A limited issued a prospectus inviting applications for 2,000 equity shares of ₹10 each at a premium of ₹2 per share payable as follows:

On application	₹2
On allotment	₹5 (including premium)
On first call	₹3
On second and final call	₹2

Applications were received for 45,000 shares and *prorata allotment* was made on the applications for 36,000 shares. Money overpaid on applications was employed on account of sum due on allotment.

Ramesh, to whom 600 shares were allotted, failed to pay the allotment money and on his subsequent failure to pay the first call, his shares were forfeited. Mohan, the holder of 900 shares, failed to pay the two calls, and his shares were forfeited after the second call.

Of the shares forfeited, 1,200 shares were sold to Krishna credited as fully paid @ ₹9 per share, the whole of Ramesh's shares being included. Pass the necessary journal entries and prepare the cash book entries and prepare balance sheet.

[June 2013 (12 Marks)]

Ans.:

Application		2
Allotment	(3 + 2)	5
First call		3
Final call		2
		<u>12</u>

In the books of A Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c (45,000 × 2) Dr. To Share Application A/c (Being, application money received on 45,000 shares @ ₹2 per share)	90,000	90,000
	Share Application A/c (See Note 1) Dr. To Share Capital A/c To Share Allotment A/c To Bank A/c (Being, application money of ₹60,000 transferred to capital account and ₹12,000 adjusted towards allotment and balance refunded to applicants as per Boards Resolution No... dated)	90,000	60,000 12,000 18,000
	Share Allotment A/c (30,000 × 5) Dr. To Share Capital A/c (30,000 × 3) To Securities Premium A/c (30,000 × 2) (Being, allotment money due on 30,000 shares @ ₹5 per share including ₹2 for securities premium as per Boards Resolution No... dated)	1,50,000	90,000 60,000

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c (Note 2) To Share Allotment A/c (Being, balance allotment money received excluding that of Ramesh)	Dr. 1,35,240	1,35,240
	Share First Call A/c (30,000 × 3) To Share Capital A/c (Being, first call money due on 30,000 shares @ ₹ 3 per share as per Boards Resolution No.... dated	Dr. 90,000	6,000
	Bank A/c (30,000 - 600 - 900) × 3 Share First Call A/c (Being, first call money received excluding that of Ramesh & Mohan)	Dr. 85,500	85,500
	Share Capital A/c (600 × 8) Securities Premium A/c (600 × 2) To Share Forfeited A/c (Note 1) To Share Allotment A/c (Note 2) To Share First Call A/c (600 × 3) (Being, Ramesh's share forfeited for non- payment of first call & final call as per Boards Resolution No.... dated	Dr. 4,800 1,200	* 1,440 ** 2,760 1,800
	Share Final Call A/c (29,400 × 2) To Share Capital A/c (Being, final call money due on 2,000 shares @ ₹ 2 per share as per Boards Resolution No.... dated	58,800	58,800
	Bank A/c (29,400 - 900) × 2 Share Final Call A/c (Being, final money received excluding that of Pawan & Promod)	Dr. 57,000	57,000
	Share Capital A/c (900 × 10) To Share Forfeited A/c (900 × 5) To Share First Call A/c (900 × 3) To Share Final Call A/c (900 × 2) (Being Mohan's share forfeited for non- payment of first call & final call as per Boards Resolution No.... dated	Dr. 9,000	4,500 2,700 1,800
	Bank A/c (1,200 × 9) Share Forfeiture A/c (1,200 × 1) To Share Capital A/c (1,200 × 10) (Being, 80 shares re-issued @ 11 as per Boards Resolution No.... dated	Dr. 10,800 Dr. 1,200	12,000
	Share Forfeited A/c (See Note 3) To Capital Reserve A/c (Being, balance in share forfeiture account transferred to capital reserve account)	Dr. 3,240	3,240

Balance Sheet of A Ltd.

EQUITY & LIABILITIES		₹
Shareholders Fund		
Share Capital (29,700 shares @ ₹10 each)		2,97,000
Securities Premium		58,800
Share Forfeited Account		1,500
Capital Reserve		3,240
		<u>3,60,540</u>
ASSETS		₹
Current Assets		
Cash & Bank Balance		3,60,540
		<u>3,60,540</u>

Note 1:

Shares applied	Shares allotted	Application money received	Application money appropriated towards				Refund
			Application (Capital)	Allotment	First call	Final call	
36,000	30,000	72,000	60,000	12,000	-	-	-
9,000	-	18,000	-	-	-	-	18,000
45,000	30,000	90,000	60,000	12,000	-	-	18,000

Calculation for Ramesh:

720	600	* 1,440	1,200	240	-	-	-
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Calculations of shares applied by Ramesh:

For 30,000 shares – 36,000 shares

For 600 shares – ?

$$\frac{600 \times 36,000}{30,000} = 720$$

Note 2: Calculation of amount to be received on allotment:

	Total		For Ramesh
Amount due on Allotment (30,000 × 5)	1,50,000	(600 × 5)	3,000
Excess application money adjusted towards allotment	<u>(12,000)</u>		<u>(240)</u>
Amount not received form Ramesh	1,38,000		** 2,760
	<u>(2,760)</u>		
	1,35,240		

Note 3: Calculation of capital reserve on reissue of shares:

Share Forfeited A/c credited at the time of forfeiture for 900 share of Ramesh	1,440
Proportionate Share Forfeited A/c bal. for Mohan's share (4,500 × 600/900)	3,000
Amount debited on reissue (1,200 × 1)	<u>(1,200)</u>
	<u>3,240</u>

Problem No. 3] Y Ltd. forfeited 1,000 equity shares of ₹10 each, ₹7 called-up, issued at a premium of 20% (to be paid at the time of allotment) for non-payment of allotment money of ₹4 per share (including premium) and first call of ₹2 per share. Out of these, 600 shares were re-issued as fully paid-up for ₹8.50 per share. Pass the journal entries for forfeiture and re-issue of shares.

[Dec. 2013 (3 Marks)]

Ans.:

Application	3 ✓
Allotment (2 + 2)	4 ×
First Call	2 ×
Final Call	3
	<u>12</u>

In the books of Y Ltd.
Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Share Capital A/c (1,000 × 7) Dr.	7,000	
	Securities Premium A/c (1,000 × 2) Dr.	2,000	
	To Share Forfeited A/c (1,000 × 3)		3,000
	To Share Allotment A/c (1,000 × 4)		4,000
	To Share First Call A/c (1,000 × 2)		2,000
	(Being, 1,000 equity shares forfeited of ₹7 called up for non-payment of allotment of ₹4 and first call of ₹2 per share as per Board's resolution No..... dated)		
	Bank A/c (600 × 8.5) Dr.	5,100	
	Share Forfeited A/c (600 × 1.5) Dr.	900	
	To Share Capital A/c (600 × 10)		6,000
	(Being, re-issue of 600 shares for ₹8.5 and discount of ₹1.5 on re-issue debited to share forfeited account as per Board's resolution No..... dated)		
	Share Forfeited A/c [Note 1] Dr.	900	
	To Capital Reserve A/c		900
	(Being, profit on re-issue transferred to capital reserve)		

Note 1: Calculation of capital reserve:

Share Forfeited A/c credited at the time of forfeiture for 1,000 share	3,000
Proportionate share forfeited balance for 600 share (3,000 × 600/1,000)	1,800
Share Forfeited A/c debited at the time of reissue	(900)
Amount to be credited to capital reserve	900

Problem No. 4] A Ltd. forfeited 360 shares of ₹10 each, ₹8 called-up, issued at a premium of ₹2 per share to Sanjay for non-payment of allotment money of ₹5 per share (including premium). Out of these, 320 shares were re-issued to Amit ₹8 called up for ₹10 per share fully paid-up. Pass necessary journal entries.

[June 2017 (3 Marks)]

Ans.: Problem is not properly drafted, details of application money and call money is not clearly given in the problem. Hence, it assumed that out of ₹8 paid-up, ₹2 is application money and ₹3 is the first call money and accordingly problem is solved.

Application	2 ✓
Allotment (3 + 2)	5 ×
First call	3 ×
Final call	2
	<u>12</u>

In the books of A Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Share Capital A/c (360 × 8) Dr.	2,880	
	Securities Premium A/c (360 × 2) Dr.	720	
	To Share Forfeiture A/c (360 × 2)		720
	To Share Allotment A/c (360 × 5)		1,800
	To Share First Call A/c (360 × 3)		1,080
	(Being, forfeiture of 360 shares for non-payment of allotment and first call money)		
	Bank A/c (320 × 8) Dr.	2,560	
	Share Forfeiture A/c (320 × 2) Dr.	640	
	To Share Capital A/c (320 × 10)		3,200
	(Being, 320 shares issued at ₹8 called-up for ₹10 per share fully paid-up)		

Note 1:

Calculation of capital reserve:

(Amount paid per share – Discount on reissue) × No. of shares reissued

$$(2 - 2) \times 320 = 0 \text{ (zero)}$$

Problem No. 5] Delhi Chemicals Ltd. was registered with an authorized capital of ₹15,00,000; consisting of 1,50,000 Equity shares of ₹10 each. The company issued a prospectus inviting applications for 60,000 shares at a premium of ₹2 per share, payable as under:

On application	- ₹2
On allotment	- ₹5 (including Premium)
On first & final call	- ₹5

Applications were received for 80,000 shares. Letters of regret were sent with the refund orders to the applicants of 12,000 shares. Pro rata allotment was made on the balance.

Excess money received on applications was utilized towards the allotment money. Pass the necessary entries in the Journal of the company and also prepare the required note of 'Share Capital' in accordance with the provisions of Schedule-III of Companies Act, 2013.

[June 2017 (5 Marks)]

Ans.

In the books of Delhi Chemical Ltd.
Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c To Share Application A/c (Being, application money for 80,000 shares received at @ ₹2 per share)	Dr. 1,60,000	1,60,000
	Share Application A/c To Share Capital A/c To Share Allotment A/c To Bank A/c (Being, out of application money, ₹1,20,000 pertaining to 60,000 shares transferred to share capital account, excess application adjusted towards allotment and balance money on 12,000 shares refunded)	Dr. 1,60,000	1,20,000 16,000 24,000
	Share Allotment A/c (60,000 × 5) To Share Capital A/c (60,000 × 3) To Securities Premium A/c (60,000 × 2) (Being, allotment money due @ ₹5 including premium ₹2 per share on 60,000 shares)	Dr. 3,00,000	1,80,000 1,20,000
	Bank A/c (3,00,000 - 16,000) To Share Allotment A/c (Being, balance money due on allotment received)	Dr. 2,84,000	2,84,000
	Share First & Final A/c (60,000 × 5) To Share Capital A/c (Being, first & final call due @ ₹5 per share on 60,000 shares)	Dr. 3,00,000	3,00,000
	Bank A/c To Share First & Final A/c (Being, first & final call received)	Dr. 3,00,000	3,00,000

Note No. 1]

Shares Applied	Shares Allotted	Application money received	Application money appropriated			Refund
			Application (i.e. Capital)	Allotment	First & Final call	
68,000	60,000	1,36,000	1,20,000	16,000	-	-
12,000	-	24,000	-	-	-	24,000
80,000	60,000	1,60,000	1,20,000	16,000	-	24,000

Problem No. 6] Mithu Ltd. forfeited equity shares of ₹ 10 each, which were originally issued at a premium of 20% to Guna. On these shares ₹ 9 per share called up (other than premium). Guna failed to pay allotment money ₹ 5 (including premium) and also the first call of ₹ 2 per share. Out of these shares 700 shares are re-issued to Naku as fully paid-up for ₹ 8 per share. Give journal entries for forfeiture and re-issue of shares. [June 2018] (3 Marks)

Ans.:

Application	4	✓
Allotment (3 + 2)	5	×
First call	2	×
Final call	1	
	<u>12</u>	

In the books of Mithu Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Share Capital A/c (1,000 × 9) Dr.	9,000	
	To Share Forfeiture A/c (1,000 × 4)		4,000
	To Share Allotment A/c (1,000 × 5)		5,000
	To Share First Call A/c (1,000 × 1)		1,000
	(Being, 1,000 shares held by Guna forfeited for non-payment of allotment and first call money as per Board Resolution No. Dated		
	Bank A/c (700 × 8) Dr.	5,600	
	Share Forfeiture A/c (700 × 1) Dr.	700	
	To Share Capital A/c (700 × 9)		6,300
	(Being, Forfeited shares re-issued to Naku as per Board Resolution No. Dated		
	Share Forfeiture A/c [(4 - 1) × 700] Dr.	2,100	
	To Capital Reserve A/c		2,100
	(Being, balance of Share Forfeiture A/c transferred to Capital Reserve A/c)		

Problem No. 7] Mudgal Ltd. offered 400 lakh equity shares of ₹ 10 each to the public. The amount was payable as to ₹ 4 on application, ₹ 5 (including premium) on allotment and ₹ 3 on call. The issue was subscribed to the extent of (two and one-fourth) 2-1/4th times. Applications for below 100 shares (for 200 lakh shares in total) were rejected. An applicant for 200 lakh shares was allotted 80 lakh shares. The remaining shares were allotted on *pro rata* basis to other applicants. The excess amount received on applications to the extent of allotment dues was retained. Shareholders holding 16 lakh shares out of *pro rata* issue failed to pay the allotment money and call money. Their shares were forfeited. 10 lakh equity shares were re-issued at ₹ 9 per share fully paid.

Show the journal entries including cash transactions.

[Dec. 2018 (5 Marks)]

Ans.

Application

4

Allotment

(3 + 2)

5

First & Final Call

3

12

In the books of Mudgal Ltd.
Journal Entries

(₹ in lakhs)

Date	Particulars	Dr.	Cr.
	Bank A/c To Share Application A/c (Being, Being application money received 900 lakh shares)	Dr. 3,600	3,600
	Share Application A/c To Share Capital A/c To Share Allotment A/c To Bank A/c (Being, application money ₹1,600 lakh transferred to capital account and ₹1,120 lakh adjusted towards allotment and balance ₹880 lakh refunded to applicants as per Boards Resolution No. dated)	Dr. 3,600	1,600 1,120 880
	Share Allotment A/c (400 × 5) To Share Capital A/c (400 × 3) To Securities Premium A/c (400 × 2) (Being, allotment money due on 400 lakh shares @ ₹5 per share including ₹2 for securities premium as per Boards Resolution No. dated)	Dr. 2,000	1,200 800
	Bank A/c [Note 2] To Share Allotment A/c (Being, allotment money received)	Dr. 836	836
	Share First & Final Call A/c (400 × 3) To Share Capital A/c (Being, first & final call money due on 400 lakh shares @ ₹3 per share as per Boards Resolution No.... dated)	Dr. 1,200	1,200
	Bank A/c (400 - 16) × 3 To Share First & Final Call A/c (Being, first & final call money received)	Dr. 1,152	1,152
	Share Capital A/c (16 × 10) Securities Premium A/c (16 × 2) To Share Forfeiture A/c To Share Allotment A/c	Dr. 160 32	* 100 ** 44

Date	Particulars	Dr.	Cr.
	To Share First & Final Call A/c (16 × 3) (Being, 16 lakh shares forfeited for non-payment of allotment & first & final call as per Boards Resolution No. dated)		48
	Bank A/c (10 × 9) Dr.	90	
	Share Forfeiture A/c (10 × 1)	10	
	To Share Capital A/c (10 × 10) (Being, 10 lakh shares re-issued @ ₹9 and discount on re-issue debited to share forfeiture account as per Boards Resolution No. dated)		100
	Share Forfeiture A/c [Note 3] Dr.	52.5	
	To Capital Reserve A/c (Being, balance in share forfeiture account transferred to capital reserve account)		52.5

Note 1:

(₹ in lakh)

Category	Shares applied	Shares allotted	Application money received	Application money appropriated towards			Refund
				Application (Capital)	Allotment	First & Final call	
I	200	-	800	-	-	-	800
II	200	80	800	320	400	-	80
III	500	320	2,000	1,280	720	-	-
	900	400	3,600	1,600	1,120	-	880

Calculation for 16 lakh shares allotted on *pro-rata* basis:

III	25	16	* 100	64	36	-	-
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Calculation of shares applied to whom 16 lakh shares are allotted:

For 320 lakh shares allotted - 500 lakh shares applied

For 16 lakh shares allotted - ?

$$\frac{16 \times 500}{320} = 25 \text{ lakh shares}$$

Note 2: Calculation of amount received on allotment:

	Total	For 16 lakh shares allotted
Amount due on Allotment (400 × 5)	2,000	(16 × 5) 80
Excess application money adjusted towards allotment	(1,120)	(36)
	880	** 44
Amount not received from 16 lakh shares allotted	(44)	
	836	

Note 3: Calculation of capital reserve on reissue of share:

Share Forfeited A/c credited for forfeiture of 16 lakh shares	₹ 100
Proportionate Share Forfeited A/c bal. for reissued 10 lakh shares (100 × 10/16)	62.5
Amount debited on reissue	(10)
	52.5

Problem No. 8] During the course of the meeting of Board of Directors of Yana Ltd., it has been decided to forfeit the 500 shares held by Aasha on account of non-payment of the call amount of ₹4 per share. It has been informed that the face value and the called up value per share is ₹10. Based on the resolution passed in the meeting of Board of Directors, shares of Aasha have been forfeited. In turn, 300 forfeited shares are reissued at the rate of ₹9 per share. You are required to pass the journal entries in the books of Yana Ltd. [June 2019 (5 Marks)]

Ans.

In the books of Yana Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Share Capital A/c (500 × 10) Dr.	5,000	
	To Share Forfeited A/c (500 × 6)		3,000
	To Share First & Final Call A/c (500 × 4)		2,000
	(Being, 500 shares forfeited for non-payment first & final call as per Boards Resolution No. dated		
	Bank A/c (300 × 9) Dr.	2,700	
	Share Forfeited A/c (300 × 1)	300	
	To Share Capital A/c (300 × 10)		3,000
	(Being, 300 shares re-issued @ 9 and discount of ₹1 on re-issue debited to share forfeiture account as per Boards Resolution No. dated		
	Share Forfeited A/c [Note 1] Dr.	1,500	
	To Capital Reserve A/c		1,500
	(Being, balance in share forfeiture account transferred to capital reserve account)		

Note 1: Calculation of capital reserve on reissue of share:

Share Forfeited A/c credited at the time of forfeiture for 500 share	₹ 3,000
Proportionate Share Forfeited A/c bal. for reissued 300 share (3,000 × 300/500)	1,800
Amount debited on reissue	(300)
	300

Alternatively,

$$\begin{aligned} \text{Capital reserve} &= (\text{Amount paid per share} - \text{Discount on reissue}) \times \text{No. of shares issued} \\ &= (6 - 1) \times 300 \\ &= 1,500 \end{aligned}$$

Problem No. 9] Aaru Ltd. has issued 500 lakh equity shares of ₹10 each to public in the year of 2017-18. The amount were payable as ₹2 on application, ₹2 on allotment, ₹3 on first call and the balance on second and final call. All the due amounts were received except from the following:

- X who is holding 15,000 shares, on which allotment, first and second calls are in arrear.
- Y who is holding 10,000 shares, on which first and second calls are in arrear.
- Z who is holding 5,000 shares on which second call is in arrear.

On 1st November, 2019, the directors forfeited all the above shares and reissued them as fully paid to Annu as under:

Forfeited shares of X were re-issued at ₹11 per share, those of Y at ₹9 per share and those of Z at ₹7 per share. Give the necessary journal entries to record the transactions relating to forfeiture and re-issue of shares. [Dec. 2019 (5 Marks)]

Ans.

Application	2
Allotment	2
First Call	3
Second & Final Call	3
	10

In the books of Aaru Ltd.

Journal Entries

(₹ in lakh)

Date	Particulars		Dr.	Cr.
	Bank A/c	Dr.	1,000	
	To Share Application A/c			1,000
	(Being, application money received on 500 lakh shares @ ₹2 per share)			
	Share Application A/c	Dr.	1,000	
	To Share Capital A/c			1,000
	(Being, application money transferred to share capital account)			
	Share Allotment A/c (500 × 2)	Dr.	1,000	
	To Share Capital A/c			1,000
	(Being, allotment money due on 500 lakh shares @ ₹2 per share as per Board Resolution No. dated			
	Bank A/c [(500 - 0.15) × 2]	Dr.	999.70	
	To Share Allotment A/c			999.70
	(Being, allotment money received)			

Date	Particulars	Dr.	Cr.
	Share First Call A/c (500 × 3) To Share Capital A/c (Being, first call money due on 500 lakh shares @ ₹3 per share as per Board Resolution No. dated)	Dr. 1,500	1,500
	Bank A/c [(500 - 0.15 - 0.10) × 3] To Share First Call A/c (Being, first call money received)	Dr. 1,499.25	1,499.25
	Share Second & Final Call A/c (500 × 3) To Share Capital A/c (Being, second & final call money due on 500 lakh shares @ ₹3 per share as per Board Resolution No. dated)	Dr. 1,500	1,500
	Bank A/c [(500 - 0.15 - 0.10 - 0.05) × 3] To Share Second & Final Call A/c (Being, second & final call money received)	Dr. 1,499.10	1,499.10
	Share Capital A/c [(0.15 + 0.10 + 0.05) × 10] To Share Forfeiture A/c To Share Allotment A/c (0.15 × 2) To Share First Call A/c [0.15 + 0.10) × 3] To Share Second & Final Call A/c [0.15 + 0.10 + 0.05) × 3] (Being, shares forfeited for non-payment of allotment and call money as per Board Resolution No. dated)	Dr. 3.00	1.05 0.30 0.75 0.90
	Bank A/c [(0.15 × 11) + (0.10 × 9) + (0.05 × 7)] Share Forfeiture A/c [(0.10 × 1) + (0.05 × 3)] To Share Capital A/c [(0.15 + 0.10 + 0.05 × 10)] To Securities Premium A/c (0.15 × 1) (Being, forfeited shares are reissued as per Board Resolution No. dated)	Dr. 2.90 0.25	3.00 0.15
	Share Forfeiture A/c (1.05 - 0.25) To Capital Reserve A/c (Being, balance in share forfeiture account transferred to capital reserve account)	Dr. 0.80	0.80

Problem No. 10] Veena Ltd. forfeited 300 equity shares of 100 each 80 per share (including premium) being called up, which were issued at a premium of 10%. Shareholder of 300 shares had paid only 50 per share (including premium). Out of these forfeited shares 200 shares were subsequently re-issued by the company at 80 called-up for 50 per share. Give necessary Journal Entries with regard to forfeiture and re-issue of shares.

[Dec. 2021 (3 Marks)]

Ans.

In the books of Veena Ltd.
Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Share Capital A/c [300 × (80 - 10)] Dr.	21,000	
	To Share Forfeiture A/c [300 × (50 - 10)]		12,000
	To Share Final Call A/c (300 × 30)		9,000
	(Being, shares forfeited for non-payment of call money as per Boards Resolution No. dated		
	Bank A/c (200 × 50) Dr.	10,000	
	Share Forfeiture A/c (200 × 30)	6,000	
	To Share Capital A/c (200 × 80)		16,000
	(Being, forfeited shares are reissued as per Board Resolution No. dated		
	Share Forfeiture A/c [Note 2] Dr.	2,000	
	To Capital Reserve A/c		2,000
	(Being, balance in share forfeiture account transferred to capital reserve account)		

Note 1: Securities Premium A/c will not be debited at the time of passing entry for forfeiture of shares as there is not default in receiving premium.

Note 2: Calculation of capital reserve on reissue of share:

	₹
Share Forfeited A/c credited at the time of forfeiture for 300 share	12,000
Proportionate Share Forfeited A/c bal. for reissued 200 share (12,000 × 200/300)	8,000
Amount debited on reissue	(6,000)
	2,000

Alternatively,

$$\begin{aligned}
 \text{Capital reserve} &= (\text{Amount paid per share} - \text{Discount on reissue}) \times \text{No. of shares issued} \\
 &= (40 - 30) \times 200 \\
 &= 2,000
 \end{aligned}$$

UNIT II: SWEAT EQUITY SHARES

THEORETICAL QUESTIONS

Q. 7. A listed company intends to issue sweat equity shares to its directors and a class of employees. Advise the company about the conditions to be fulfilled for such an issue. [Dec. 2015 (5 Marks)]

Or

Explain the issue of sweat equity shares and their limitation and restriction. [Dec. 2017 (5 Marks)]

Ans.

Sweat Equity Shares [Section 2(88)]: Sweat equity shares means equity shares issued by a company to its directors or employees at a discount or for consideration, other than cash for providing know-how or making available rights in the nature of intellectual property rights or value additions, by whatever name called.

Issue of sweat equity shares [Section 54]: A company can issue sweat equity shares, of a class of shares already issued, if the following conditions are satisfied:

- (a) The issue has been authorized by a **special resolution** passed by the company in the general meeting.
- (b) Such special resolution should clearly specify:
 - Number of shares
 - Current market price
 - Consideration and
 - Classes of directors or employees to whom such equity shares are to be issued.
- ~~(c) At least 1 year should have elapsed from the date on which the company was entitled to commence business: [Deleted by the Companies (Amendment) Act, 2017]~~
- (d) A company whose shares are listed on a recognized stock exchange issuing sweat equity shares should comply with the SEBI (Share Based Employee Benefits & Sweat Equity) Regulations, 2021.
- (e) A company whose shares are not so listed should comply with the Companies (Share Capital & Debentures) Rules, 2014.

Rights, limitations, restrictions applicable to sweat equity shares [Section 54(2)]: The rights, limitations, restrictions and provisions as are for the time being applicable to equity shares shall be applicable to the sweat equity shares issued and the holders of sweat equity shares shall rank *pari passu* (on an equal footing) with other equity shareholders.

UNIT III : ISSUE & REDEMPTION OF PREFERENCE SHARES

THEORETICAL QUESTIONS

Q. 8. Write a short note on: Redemption of Preference Shares

[June 2002 (5 Marks)]

Or

What are the conditions which must be fulfilled for redemption of preference shares?

[June 2011 (6 Marks)]

Ans. Issue & Redemption of Preference Shares [Section 55]:

- (1) **Irredeemable preference shares cannot be issued:** No company limited by shares shall issue any preference shares which are irredeemable.
- (2) **Period for which preference shares can be issued:** If authorized by its articles a company limited by shares may issue preference shares which are liable to be redeemed within a period not exceeding 20 years from the date of their issue subject to prescribed conditions.

However, a company may issue preference shares for a period exceeding 20 years for infrastructure projects, subject to the redemption of prescribed percentage of shares on an annual basis at the option of such preferential shareholders.

As per Rule 10 of the Companies (Share Capital & Debentures) Rules, 2014, a company engaged in the setting-up and dealing with of infrastructural projects may issue preference shares for a period exceeding 20 years but not exceeding 30 years, subject to the redemption of a minimum 10% of such preference shares per year from the 21st year onwards or earlier, on proportionate basis, at the option of the preference shareholders. The term "infrastructure projects" means the infrastructure projects specified in Schedule VI.

- (3) **Source of funds for redemption:** Preference shares shall be redeemed:
 - (a) Out of the profits of the company which would otherwise be available for dividend.
 - (b) Out of the proceeds of fresh issue of shares.
 - (c) Partly out the profits of the company and partly out of the proceeds of fresh issue of shares.
- (4) **Paid-up value of redemption:** Preference shares shall be redeemed only if they are fully paid-up.
- (5) **Capital Redemption Reserve Account:** Where preference shares are proposed to be redeemed out of the profits a sum equal to the nominal amount of the shares should be transferred to the Capital Redemption Reserve Account.
Capital Redemption Reserve Account may be applied for issue of fully paid-up bonus shares.
- (6) **Premium on redemption of preference shares:**
 - (i) In case of prescribed class of companies whose financial statement required to comply with the prescribed accounting standards under section 133, the premium, if any, payable on redemption shall be provided for out of the profits of the company, before the shares are redeemed.
 - (ii) In a other cases, the premium payable on redemption shall be provided for:
 - (a) Out of the profits of the company.
 - (b) Out of the company's securities premium account, before such shares are redeemed.
 - (c) Partly out the profits of the company and partly out of securities premium account.
- (7) **Redemption of preference shares by issue of further redeemable preference shares:** Where a company is not in a position to redeem any preference shares or to pay dividend, if any, on such shares in accordance with the terms of issue (*such shares referred as unredeemed preference shares*), it may, with the consent of the holders of 3/4th in value of such preference shares and with the approval of the Tribunal on a petition made by it in this behalf, issue further redeemable preference shares equal to the amount due, including the dividend thereon, in respect of the unredeemed preference shares, and on the issue of such further redeemable preference shares, the unredeemed preference shares shall be deemed to have been redeemed.

While giving approval, the Tribunal shall order the redemption forthwith of preference shares held by such persons who have not consented to the issue of further redeemable preference shares.

Explanation: The issue of further redeemable preference shares or redemption of preference shares shall not be deemed to be an increase or a reduction, in the share capital of the company.

Q. 9. Distinguish between 'equity shares' and 'preference shares'.

[Dec. 2016 (3 Marks)]

Ans. Following are the main points of distinction between preference share capital & equity share capital:

Points	Preference Share Capital	Equity Share Capital
Meaning	Preference share capital, with reference to any company limited by shares, means that part of the issued share capital of the company which carries or would carry a preferential right with respect to: (a) Payment of dividend, either as a fixed amount or an amount calculated at a fixed rate, which may either be free of or subject to income-tax. (b) Repayment, in the case of a winding-up or repayment of capital, of the amount of the share capital paid-up or deemed to have been paid-up, whether or not, there is a preferential right to the payment of any fixed premium or premium on any fixed scale, specified in the memorandum or articles of the company.	Equity share capital, with reference to any company limited by shares, means all share capital which is not preference share capital.
Dividend	Preference shares are entitled to a fixed rate of dividend.	Rate of dividend on equity shares is recommended by the board of directors in its report to the shareholders, which is approved by the shareholders at the AGM.
Preference in dividend	Dividend on the preference shares is paid in preference to the equity shares.	Dividend on equity shares is paid only after preference dividend has been paid.
Preference in winding-up	In case of winding-up, preference share holders get preference over equity share holders with regard to the payment of capital.	In case of winding-up, equity share holders get payment of capital after the payment of capital to preference shareholders.

Points	Preference Share Capital	Equity Share Capital
Cumulative-ness	Dividend on preference share may be cumulative.	Dividend on equity shares is not cumulative.
Voting rights	Voting rights of preference shareholders are restricted. As per Section 47(2), a preference shareholder can vote only in following cases: (a) When his special rights as a preference shareholder are being varied. (b) Any resolution for the winding-up of the company or for the repayment or reduction of its equity or preference share capital. (c) If preference dividend has not been paid for a period of 2 years or more.	An equity shareholder can vote on all matters affecting the company.
Bonus & right shares	No bonus shares/right shares are issued to preference share holders	A company may issue rights shares or bonus shares to the company's existing equity shareholders.
Redemption	Preference shares are liable to be redeemed within a period 20 years from the date of issue.	Equity shares cannot be redeemed except under a scheme involving reduction of capital or buy-back of its own shares.

Q. 10. What do you mean by Capital Redemption Reserve? How it can be utilized as per Companies Act, 2013 and presentation in financial statements?

[Dec. 2021 (3 Marks)]

Ans. Capital Redemption Reserve Account [Section 55(2)]: Where preference shares are proposed to be redeemed out of the profits a sum equal to the nominal amount of the shares should be transferred to the Capital Redemption Reserve Account.

Capital Redemption Reserve Account may be applied for issue of fully paid-up bonus shares.

Transfer of certain sums to capital redemption reserve account [Section 69]:

- (1) Where a company purchases its own shares out of free reserves or securities premium account, a sum equal to the nominal value of the shares so purchased shall be transferred to the Capital Redemption Reserve Account and details of such transfer shall be disclosed in the balance sheet.
- (2) The Capital Redemption Reserve Account may be applied by the company, in paying up unissued shares of the company to be issued to members of the company as fully paid bonus shares.

Presentation in financial statements: Capital Redemption Reserve Account will be shown in balance sheet on liabilities side under the head "Reserve & Surplus".

PROBLEMS & SOLUTIONS

Problem No. 11] The summarized balance sheet of AB Ltd. as on 31.3.2023 is as follows:

EQUITY & LIABILITIES	80,000	
Equity Shares of ₹10 each ₹8 called-up	(300)	
<i>Less:</i> Calls-in-arrears ₹2 per share	1,00,000	79,700
1,000, 11% Preference Shares of ₹100 each fully paid-up		
<i>Less:</i> Calls-in-arrears on 250 shares	(5,000)	95,000
Securities Premium		5,300
Investment Allowance Reserve		55,000
General Reserve		50,000
Profit & Loss (<i>Surplus</i>)		90,000
Trade Payables		25,000
		4,00,000
		₹
ASSETS		1,50,000
Land & Building		50,000
Plants		25,000
Furniture		45,000
Investments (Face value ₹50,000)		20,000
Stock in trade		30,000
Trade Receivables		80,000
Cash at Bank		4,00,000

The company resolved to:

- (i) Realize investments at ₹40,000.
- (ii) Forfeit equity shares on which calls are in arrears.
- (iii) Issue 500, 14% debentures of ₹100 each at premium of 5%.
- (iv) Forfeit preference shares on which the call money remained unpaid immediately before the redemption of preference shares, holders of 200 shares paid their dues before forfeiture.
- (v) Re-issue the forfeited preference shares at ₹50 each.
- (vi) Re-issue the forfeited equity shares at ₹12 each as ₹8 paid-up.

Pass necessary journal entries to give effect to the above. [Dec. 2012 (6 Marks)]

Ans.

In the books of AB Ltd.
Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c Dr. 40,000	40,000	
	Profit & Loss A/c Dr. 5,000	5,000	
	To Investment A/c		45,000
	(Being, investment sold at loss)		
	Equity Share Capital A/c (150 × 8) Dr. 1,200	1,200	
	To Equity Share Forfeited A/c (150 × 6)		900
	To Call-in-Arrear A/c (150 × 2)		300
	(Being, forfeiture of 150 equity shares for non-payment of Call-in-Arrear)		
	Bank A/c (500 × 105) Dr. 52,500	52,500	
	To 14% Debenture A/c (500 × 100)		50,000
	To Securities Premium A/c		2,500
	(Being, 500, 14% debenture issued at 5% premium)		
	Bank A/c (200 × 20) Dr. 4,000	4,000	
	To Call-in-Arrear A/c		4,000
	(Being, Call-in-Arrear received on 200 preference shares)		
	11% Preference Share Capital A/c (50 × 100) Dr. 5,000	5,000	
	To Preference Share Forfeited A/c (50 × 80)		4,000
	To Call-in-Arrear A/c (50 × 20)		1,000
	(Being, forfeiture of 50, 11% Preference shares for non-payment of Call-in-Arrear)		
	Bank A/c (50 × 50) Dr. 2,500	2,500	
	Preference Share Forfeited A/c (50 × 50) Dr. 2,500	2,500	
	To 11% Preference Share Capital A/c		5,000
	(Being, Re-issue of forfeited preference shares @ 50 per shares)		
	Bank A/c (150 × 12) Dr. 1,800	1,800	
	To Equity Share Capital A/c (150 × 8)		1,200
	To Securities Premium A/c (150 × 4)		600
	(Being, Re-issue of forfeited equity shares @ 12 each as ₹ 8 paid up)		
	Equity Share Forfeited A/c Dr. 900	900	
	Preference Share Forfeited A/c Dr. 1,500	1,500	
	To Capital Reserve A/c		2,400
	(Being, balance of share forfeited account transferred to Capital Reserve Account)		
	11% Preference Share Capital A/c Dr. 1,00,000	1,00,000	
	To Bank A/c		1,00,000
	(Being, preference shares redeemed)		
	General Reserve A/c Dr. 50,000	50,000	
	Profit & Loss A/c Dr. 50,000	50,000	
	To Capital Redemption Reserve A/c		1,00,000
	(Being, amount transferred to CRR as per requirement of Section 55 of the Companies Act, 2013)		

Problem No. 12] Extract of ledger balances of Kalpana Ltd. as on 31st March, 2024 includes the following:

2,000, 12% Preference shares of ₹100 each, fully paid

Surplus

Securities premium

Under the terms of issue, the preference shares are redeemable on 31st March, 2024 at a premium of 10%. The directors desire to make a minimum fresh issue of equity shares of ₹10 each at a premium of 5% for redemption purpose.

You are required to ascertain the amount of fresh issue to be made and pass necessary journal entries in the books of the company. [June 2016 (5 Marks)]

Ans.

In the books of Kalpana Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c (16,800 × 10.5) Dr. To Equity Share Capital A/c (16,800 × 10) To Securities Premium A/c (16,800 × 0.5) (Being, 16,800 equity share of ₹10 issued @ 5% premium at ₹10.5 as per Shareholders Resolution No.... dated))	1,76,400	1,68,000 8,400
	Preference Shares Capital A/c Dr. Premium on Redemption A/c Dr. To Preference Shareholders A/c (Being, amount due on redemption of preference shares to preference shareholder as per Board Resolution No... dated))	2,00,000 20,000	2,20,000
	Preference Shareholders A/c Dr. To Bank A/c (Being, amount paid to preference shareholders)	2,20,000	2,20,000
	Surplus A/c Dr. To Capital Redemption Reserve A/c (Being, amount transferred to CRR as per requirement of Section 55 of the Companies Act, 2013)	32,000	32,000
	Securities Premium A/c Dr. To Premium on Redemption A/c (Being, premium on redemption of preference share written off against securities premium account)	20,000	20,000

Note No. 1:

Free Reserves		Capital Profits		
	Surplus	Balance	SP	CRR
Balance	40,000	Balance	12,000	32,000
Premium on redemption	(8,000)	Premium on redemption	(12,000)	
	32,000			
For preference share capital	(32,000)	On issue of equity shares	8,400	
	-		8,400	

Preference share capital	2,00,000	Premium on redemption	20,000
Out of surplus	(32,000)	Out of SP	(12,000)
	1,68,000		8,000
Out of proceeds of fresh issue	(1,68,000)	Out of surplus	(8,000)
	-		-

$$\text{No. of equity shares to be issued} = \frac{1,68,000}{10} = 16,800$$

Note: For the purpose of writing off premium on redemption of preference shares only existing balance in securities premium can be used.

Problem No. 13] Lily Ltd., having sufficient balance to the credit of general reserve and ₹ 1,00,000 balance in securities premium account, decides to:

- Redeem 5,000, 10% redeemable preference shares of ₹ 100 each fully paid-up at a premium of 5%; and
- Capital redemption reserve arising as a result of redemption be utilized in allotting the un-issued shares of the company as fully paid equity shares of ₹ 10 each by way of bonus to its members. Show journal entries for redemption of preference shares and issue of bonus shares. [Dec. 2016 (5 Marks)]

Ans.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	10% Redeemable Preference Shares A/c (5,000 × 100)	Dr. 5,00,000	
	Premium on Redemption A/c (5,000 × 5)	Dr. 25,000	
	To Preference Shareholders A/c		5,25,000
	(Being, amount due on 10% preference shares at ₹ 5 premium as per Board resolution No..... dated		
	Preference Shareholders A/c	Dr. 5,25,000	
	To Bank A/c		5,25,000
	(Being, amount paid to preference shareholders)		
	General Reserve A/c	Dr. 5,00,000	
	To Capital Redemption Reserve A/c		5,00,000
	(Being, amount transferred to CRR as per requirement of Section 55 of the Companies Act, 2013)		

Date	Particulars	Dr. (₹)	Cr. (₹)
	Securities Premium A/c To Premium on Redemption A/c (Being, premium on redemption of preference share written off from Securities Premium A/c)	Dr. 25,000	25,000
	Capital Redemption Reserve A/c To Bonus to Shareholders A/c (Being, 50,000 bonus shares of ₹10 declared to existing shareholder as per Shareholders Resolution No. dated	Dr. 5,00,000	5,00,000
	Bonus to Shareholders A/c To Equity Share Capital A/c (Being, bonus share issued to existing shareholders)	Dr. 5,00,000	5,00,000

Problem No. 14] Balance Sheet as on March 31, 2022 of M/s Rajvansh Ltd.:

I EQUITY & LIABILITIES	Note No.	₹
(1) Shareholder's Fund		
(a) Share Capital	1	2,99,500
(b) Reserves & Surplus	2	48,000
(2) Current Liabilities	3	1,72,500
TOTAL		5,20,000
II ASSETS		
(1) Non-Current Assets		3,00,000
(2) Current Assets (including Bank Balance of ₹1,00,000)		2,20,000
TOTAL		5,20,000

Note 1: Share Capital:

2,000 Equity Shares of ₹100 each		2,00,000
1,000 9% Redeemable Preference Shares of ₹100 each	1,00,000	
Less: Calls in Arrears ₹20 per share	(500)	99,500
Total		2,99,500

Note 2: Reserves & Surpluses:

General Reserve	30,000
Securities Premium	18,000
Total	48,000

Note 3: Current Liabilities:

Suppliers	1,22,500
Bills Payable	50,000
Total	1,72,500

The Directors forfeited the Preference Shares for non-payment of calls after giving notice to the shareholders and thereafter redeemed the Preference Shares at a premium of 10%. For the purpose, the company made a fresh issue of Equity Shares

of ₹100 each at a premium of 5% for such amount as was necessary, after taking into account the utilization of available sources to the maximum extent. All the shares were subscribed and money received in full.

Pass necessary Journal entries for the above transactions. [June 2017 (5 Marks)]

Ans.

In the books of Rajvansh Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	9% Preference share Capital A/c (25 × 100) Dr. To Share Forfeiture A/c (25 × 80) To Call-in-Arrear A/c (25 × 20) (Being, 25 preference shares forfeited for non-payment of call)	2,500	2,000 500
	Bank A/c (675 × 105) Dr. To Equity Share Capital A/c (675 × 100) To Securities Premium A/c (675 × 5) (Being, 675 equity share of ₹100 issued at premium of ₹5 as per Shareholders Resolution No.... dated	70,875	67,500 3,375
	9% Preference Shares Capital A/c Dr. Premium on Redemption A/c Dr. To Preference Shareholders A/c (Being, amount due on redemption of preference shares to preference shareholder as per Board Resolution No... dated ...)	97,500 9,750	1,07,250
	Preference Shareholders A/c Dr. To Bank A/c (Being, payment made to preference shareholders)	1,07,250	1,07,250
	General Reserve A/c Dr. To Capital Redemption Reserve A/c (Being, amount transferred to CRR as per requirement of Section 55 of the Companies Act, 2013)	30,000	30,000
	Securities Premium A/c Dr. To Premium on Redemption A/c (Being, premium on redemption of preference share written off against securities premium account)	9,750	9,750

Working Notes:

No. of preference shares to be forfeited = $500/20 = 25$

No. of preference shares to be redeemed = $1,000 - 25 = 975$

Free Reserves		Capital Profits		
	GR		SP	CRR
Balance	30,000	Balance	18,000	30,000
For preference share capital	(30,000)	Premium on redemption	(9,750)	
	Nil		8,250	
		On issue of equity shares	3,375	
			11,625	

Preference share capital (975 × 100)	97,500	Premium redemption (97,500 × 10%)	9,750
Out of GR	(30,000)	Out of SP	(9,750)
	67,500		Nil
Out of proceeds of fresh issue	(67,500)		
	Nil		

$$\text{No. of equity shares to be issued} = \frac{67,500}{100} = 675$$

Problem No. 15] Vanities Ltd. has an issue 1,000, 12% Redeemable Preference shares of 100 each, repayable at a premium of 10%. These shares are to be redeemed out of the accumulated out of accumulated reserve, which are more than necessary sum required for redemption.

Show the necessary entries in the books of the company, assuming that the premium on redemption of shares has to be written off against the company's Securities Premium. [Dec. 2017 (5 Marks)]

Ans.

In the books of Vanities Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	10% Preference Share Capital A/c Dr.	1,00,000	
	Premium on Redemption A/c Dr.	10,000	
	To Preference Shareholders A/c		1,10,000
	(Being, amount due on redemption of preference shares to preference shareholder as per Board Resolution No. dated		
	Preference Shareholders A/c Dr.	1,10,000	
	To Bank A/c		1,10,000
	(Being, amount paid to preference shareholders)		
	General Reserve A/c Dr.	1,00,000	
	To Capital Redemption Reserve A/c		1,00,000
	(Being, amount transferred to CRR as per requirement of Section 55 of the Companies Act, 2013)		

Date	Particulars	Dr. (₹)	Cr. (₹)
	Profit & Loss A/c To Premium on Redemption A/c (Being, premium on redemption of preference share written of form profit and loss account)	Dr. 10,000	10,000

Problem No. 16] Chandu Ltd. has issued 1,00,000 redeemable preference shares of ₹100 each, on which full amount was called, are due for redemption at a premium of 20%. The following balances are appearing in the books of the company:

	₹
9% Redeemable Preference Shares of ₹100 each	1,00,00,000
Call-in-Arrears (on above Preference Shares)	2,00,000
General Reserve	60,00,000
Securities Premium	18,00,000
Development Rebate Reserve	40,00,000

It is ascertained that call-in-arrears are on account of final call on 10,000 shares held by four members whose where about not be known. ₹10,00,000 of the Development Rebate Reserve is free for distribution as dividend. Balance of General Reserve and Securities Premium are to be utilized for the purpose of redemption of and shortfall, if any, is to be made good by issue of equity shares of 10 each at a premium of 25%. The redemption of preference shares was duly carried out. You are required to give the necessary entries in the books of the company.

[June 2018 (5 Marks)]

Ans.

Only fully paid-up preference shares can be redeemed.

Thus, preference shares to be redeemed = 1,00,000 – 10,000 = 90,000 shares.

Face value of preference shares to be redeemed = 90,00,000.

	Free Reserve		Capital Profits			
	GR	DRR	SP	DRR	CRR	
Balance in P & L	60,00,000	10,00,000	Balance	18,00,000	30,00,000	70,00,000
(-) For preference share capital	(60,00,000)	(10,00,000)	(-) Premium on redemption	(18,00,000)		
		-	(+) On issue of equity shares	5,00,000		
				5,00,000		
Preference share capital		90,00,000	Premium on redemption			18,00,000
(-) Out of general reserve		(60,00,000)	(90,00,000 × 20%)			
(-) Out of development reserve		(10,00,000)	(-) Out of securities premium			(18,00,000)
		20,00,000				Nil
(-) Out of proceeds of fresh issue		(20,00,000)				
		Nil				

$$\text{No. of equity shares to be issued} = \frac{20,00,000}{10} = 2,00,000$$

In the books of Chandu Ltd.
Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c (2,00,000 × 12.5) To Equity Share Capital A/c (2,00,000 × 10) To Securities Premium A/c (2,00,000 × 2.5) (Being, 2,00,000 equity share of ₹ 10 issued premium of ₹ 2.5 per share as per shareholders ordinary resolution No. dated)	Dr. 25,00,000	20,00,000 5,00,000
	9% Preference Shares Capital A/c Premium on Redemption A/c To Preference Shareholders A/c (Being, amount due on 90,000, 9% Preference shares of ₹ 100 each along with premium of ₹ 20 per share as per Board resolution No. dated)	Dr. 90,00,000 Dr. 18,00,000	1,18,00,000
	Preference Shareholders A/c To Bank A/c (Being, amount paid to preference shareholders)	Dr. 1,18,00,000	1,18,00,000
	General Reserve A/c Development Rebate Reserve A/c To Capital Redemption Reserve A/c (Being, amount transferred to CRR as per requirement of Section 55 of the Companies Act, 2013)	Dr. 60,00,000 Dr. 10,00,000	70,00,000
	Securities Premium A/c To Premium on Redemption A/c (Being, premium on redemption of preference share written off against securities premium account)	Dr. 18,00,000	18,00,000

Problem No. 17] The Balance Sheet of Veena Ltd. as on 31st March, 2018 is as follows:

Particulars	₹
I. EQUITY AND LIABILITIES	
(1) Shareholders Funds:	
(a) Share capital	4,20,000
(b) Reserves and Surplus	92,000
(2) Current Liabilities:	
Trade Payables	18,000
Total	5,30,000
II. ASSETS:	
(1) Fixed Assets:	
(a) Tangible Assets	3,75,000
(b) Non-current Investments	25,000
(2) Current Assets:	
(a) Trade Receivables	55,000
(b) Cash and Cash equivalents (bank)	75,000
Total	5,30,000

The share capital of the company consists of 22,000 equity shares of ₹10 each and 2,000 preference shares of ₹100 each. Reserves and Surplus represent surplus in Statement of profit and loss. In order to facilitate the redemption of preference shares at a premium of 10%, the company decided:

- (i) To sell all the investments for ₹30,000.
- (ii) To finance part of redemption from company funds, subject to leaving a bank balance of ₹50,000.
- (iii) To issue minimum number of equity shares of ₹10 each at ₹15 per share to raise the balance of funds required.

You are required to pass necessary journal entries including bank entries to record above transactions. Narrations not necessary. [June 2019 (5 Marks)]

Ans.

In the books of Veena Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c To Investment A/c To Profit & Loss A/c (Being, sale of investment at profit)	Dr. 30,000	25,000 5,000
	Bank A/c (11,000 × 15) To Equity Share Capital A/c (11,000 × 10) To Securities Premium A/c (11,000 × 5) (Being, 11,000 equity shares of ₹10 issued at ₹15 as per Shareholders Resolution No. dated)	Dr. 1,65,000	1,10,000 55,000
	Preference Shares Capital A/c Premium on Redemption A/c To Preference Shareholders A/c (Being, amount due on redemption of preference shares to as per Board resolution No. ... dated)	Dr. Dr. 2,00,000 20,000	2,20,000
	Preference Shareholders A/c To Bank A/c (Being, amount paid to preference shareholders)	Dr. 2,20,000	2,20,000
	Reserve & Surplus A/c To Capital Redemption Reserve A/c (Being, amount transferred to CRR as per requirement of Section 55 of the Companies Act, 2013)	Dr. 90,000	90,000
	Reserve & Surplus A/c To Premium on Redemption A/c (Being, premium on redemption of preference share written off against Reserve & Surplus)	Dr. 20,000	20,000

Note 1:

Dr.		Bank A/c	Cr.	
To Balance b/d		75,000	By Preference Shareholders	2,20,000
To Investment A/c		30,000	A/c	
To Equity Share Capital A/c	1,10,000		(2,000 × 110)	50,000
To Securities Premium A/c	55,000	*1,65,000	By Balance c/d	
		2,70,000		2,70,000

* Bal. Fig.

No. of equity shares to be issued = $\frac{1,65,000}{15} = 11,000$ equity shares.

Note 2:

Free Reserves		Capital Profits	
	R & S		CRP
Balance	92,000	Transferred from R & S	90,000
(+) Profit on sale of investment	(5,000)		
	1,20,000		
(-) Premium payable on redemption	(20,000)		
	1,00,000		
(-) For preference share capital	(90,000)		
	10,000		

Preference share capital	2,00,000	Premium on redemption	20,000
(-) Out of proceeds of fresh issue	(1,10,000)	(2,00,000 × 10%)	
	90,000	(-) Out of R&S	(20,000)
(-) Out of R&S balance	(90,000)		Nil
	Nil		

Problem No. 18] RG Ltd. had an authorized equity capital of ₹20 lakh divided into shares of ₹100 each. The paid-up equity capital was ₹12,50,000. Besides this, the company had 9% Redeemable Cumulative Preference Shares of ₹10 each for ₹2,50,000.

Balance on other accounts were:

Securities Premium	₹28,000
Profit and Loss Account	₹72,000
General Reserve	₹3,40,000

Included in Sundry Assets were investments of the face value of ₹30,000 carried in the books at a cost of ₹34,000.

The company decided to redeem the cumulative preference shares at 10% premium partly by the issue of equity shares of the face value of ₹1,20,000 at a premium of 10%. Investments were sold at 105% of their face value. All preference share holders were paid off except 3 holders holding 250 shares.

After redemption of the Cumulative Preference Shares, fully paid-up bonus shares were issued in the ratio of 4:1.

Give the necessary Journal Entries bearing in mind that the Directors wanted a minimum reduction in free reserves, while effecting the above transactions.
[June 2021 (5 Marks)]

Ans.

In the books of RG Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c (30,000 × 105%) Profit & Loss A/c (34,000 - 31,500) To Investment A/c (Being, investment sold at loss)	Dr. 31,500 2,500	34,000
	Bank A/c (1,200 × 110) To Equity Share Capital A/c (1,200 × 100) To Securities Premium A/c (1,200 × 10) (Being, 1,200 equity shares of ₹100 issued at ₹110 as per Shareholders Resolution No. dated	Dr. 1,32,000	1,20,000 12,000
	Preference Shares Capital A/c Premium on Redemption A/c To Preference Shareholders A/c (Being, amount due on redemption of preference shares as per Board resolution No. ... dated	Dr. 2,50,000 Dr. 50,000	2,75,000
	Preference Shareholders A/c (24,750 × 11) To Bank A/c (Being, amount paid to preference shareholders)	Dr. 2,72,250	2,72,250
	General Reserve A/c Profit and Loss A/c To Capital Redemption Reserve A/c (Being, amount transferred to CRR as per requirement of Section 55 of the Companies Act, 2013)	Dr. 70,500 Dr. 59,500	1,30,000
	Securities Premium A/c Profit and Loss A/c To Premium on Redemption A/c (Being, premium on redemption of preference shares written off against securities premium account)	Dr. 40,000 Dr. 10,000	50,000
	Capital Redemption Reserve A/c General Reserve A/c To Bonus to Equity Shareholders A/c (Being, 3,425 bonus shares of ₹100 each declared to existing shareholder in the ratio of 1:4 as per Shareholders Resolution No. dated	Dr. 1,30,000 Dr. 2,12,500	3,42,500
	Bonus to Equity Shareholders A/c To Equity Share Capital A/c (Being, bonus share issued to equity shareholders)	Dr. 3,42,500	3,42,500

Note 1:

Free Reserves			Capital Profits		
	GR	P&L		SP	CRR
Balance	3,40,000	72,000	Balance	28,000	1,30,000
(-) Loss on sale of investment		(2,500)	(+) On issue of equity shares	12,000	
		69,500	(-) Premium on redemption	(40,000)	
(-) Premium on redemption		(10,000)	(-) Bonus issue		(1,30,000)
		59,500		Nil	Nil
(-) Preference share capital	(70,500)	(59,500)			
	2,69,500	Nil			
(-) Bonus issue	(2,12,500)				
	57,000				

Preference share capital	2,50,000	Premium on redemption	50,000
(-) Out of proceeds of fresh issue	(1,20,000)	(25,000 × 2)	
	1,30,000	(-) Out of securities premium	(40,000)
(-) Out of P&L balance	(59,500)	(-) Out of P&L	(10,000)
(-) Out of General Reserve	(70,500)		Nil
	Nil		

Note 2: There are no sufficient CRR and General Reserves to issue bonus shares in the ratio of 4:1 which means 4 bonus shares for every 1 share held. Therefore, question has been solved assuming bonus in the ratio of 1:4 i.e. 1 bonus shares for every 4 share held. Further, it can be mentioned that there is no sufficient CRR and General Reserves to issue bonus in the ratio of 4:1, therefore, such issue cannot be made.

No. of bonus equity shares to be issued = $(12,500 + 1,200) \times \frac{1}{4} = 3,425$

Problem No. 19] Beta Ltd. had issued 10,000 Redeemable Preference Shares of ₹100 each fully called, due for redemption at a premium of 10%. The following balances appeared in the books of the company:

	(₹)
Redeemable Preference Share Capital	10,00,000
Call-in-Arrears (Redeemable Preference Shares)	20,000
General Reserve	6,00,000
Securities Premium	80,000
Foreign Project Reserve	4,00,000

It is ascertained that:

Calls-in-arrears are on account of final call on 1,000 shares held by four members whose whereabouts are not known. ₹1,00,000 of the Foreign Project Reserve is free for distribution as dividends. Balance of General Reserve and Securities Premium is to be utilized for the purpose of redemption and the shortfall is to be made by issue of Equity Shares of ₹10 each at par. The redemption of preference shares is duly carried out.

You are required to give necessary journal entries.

[Dec. 2021 (5 Marks)]

Ans.

Only fully paid-up preference shares can be redeemed.

Hence, preference shares that can be redeemed = 10,000 - 1,000 = 9,000

In the books of Beta Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c (21,000 × 10) Dr. To Equity Share Capital A/c (Being, 21,000 equity share of ₹10 issued at par as per shareholders ordinary resolution No. dated)	2,10,000	2,10,000
	Preference Shares Capital A/c Dr. Premium on Redemption A/c Dr. To Preference Shareholders A/c (Being, amount due on preference shares as per Board resolution No. dated)	9,00,000 90,000	9,90,000
	Preference Shareholders A/c Dr. To Bank A/c (Being, amount paid to preference shareholders on redemption)	9,90,000	9,90,000
	General Reserve A/c Dr. Foreign Project Reserve A/c Dr. To Capital Redemption Reserve A/c (Being, amount transferred to CRR as per requirement of Section 55 of the Companies Act, 2013)	5,90,000 1,00,000	6,90,000
	Securities Premium A/c Dr. General Reserve A/c Dr. To Premium on Redemption A/c (Being, premium on redemption of preference share written off)	80,000 10,000	90,000

Note 1:

Free Reserves			Capital Profits		
	GR	FPR		SP	FPR
Balance	6,00,000	1,00,000	Balance	80,000	3,00,000
(-) Premium on redemption	(10,000)		(-) Premium on redemption	(80,000)	-
	5,90,000			Nil	3,00,000
(-) Preference share capital	(5,90,000)	(1,00,000)			
	Nil	Nil			

Preference share capital	9,00,000	Premium on redemption	90,000
(-) Out of General Reserve	(5,90,000)	(-) Out of securities premium	(80,000)
	3,10,000	(-) Out of General Reserve	(10,000)
(-) Out of Foreign Project Reserve	(1,00,000)		Nil
	2,10,000		
(-) Out of proceeds of fresh issue	(2,10,000)		
	Nil		

UNIT IV: RIGHT ISSUE & ISSUE OF BONUS SHARES

THEORETICAL QUESTIONS

Q. 11. What do you understand by 'bonus shares' and what are the advantage of issuing bonus shares? [June 2006 (4 Marks)]

Ans. Bonus shares are shares issued by a company free of cost to its existing shareholders on a prorata basis out of free reserve.

Example: A company has the following capital structures:

Particulars	
1,00,000 Equity shares of ₹ 10 each	10,00,000
Securities premium account	1,00,000
Profit & loss account	5,00,000

The company decides to make a bonus issue on 1:4 (the shareholders will receive 1 new share for every 4 shares) by making use of Securities Premium Account and Profit and Loss Account. Therefore, the company requires ₹ 2,50,000 (₹ 1,00,000 from Securities Premium Account and ₹ 1,50,000 from Profit & Loss Account) to issue 25,000 bonus shares of ₹ 10 each.

Advantages of Issuing Bonus Shares:

- (1) Fund flow is not affected adversely.
- (2) Market value of the Company's shares comes down to their nominal value by issue of bonus shares.
- (3) Market value of the members shareholdings increases with the increase in number of shares in the company.
- (4) Bonus shares is not an income. Hence it is not a taxable income.
- (5) Paid-up share capital increases with the issue of bonus shares.

Q. 12. Write a short note on: Capitalization of profits & reserve

[June 2010 (3 Marks)]

Ans. Sometimes companies have large undistributed profits which they want to distribute among their existing shareholders. Instead of distributing these profits as dividend, the issue fully paid-up shares to them free of charge in proportion to their existing shareholdings. These shares are called Bonus Shares. As a result of this issue, the company's issued capital increases whereas the assets of the company remain intact.

It is for this reason that the issue of bonus shares is called the "Capitalization of the Undistributed Profits" of the company.

Q. 13. Section 62 of the Companies Act, 2013 ensures pre-emptive rights of shareholder. Discuss. [Dec. 2012 (4 Marks)]

Ans. To preserve the shareholders proportionate dividend, liquidation and voting rights pre-emptive rights are often recognized, but their existence and scope can be effected

by provisions in the articles. However, Section 62 of the Companies Act, 2013 secures shareholders pre-emptive rights with regard to the further issue of share capital by the company.

Further issue of share capital [Section 62(1)]: Where at any time, a company having a share capital proposes to increase its subscribed capital by the issue of further shares, such shares shall be offered to:

- (1) **Existing shareholder** in proportion to the paid-up share capital on those shares by sending a letter of offer. Such right issue is subject to the following conditions:
 - (a) The offer shall be made by notice specifying the number of shares offered and limiting a time not being less than 15 days or such lesser number of days as may be prescribed and not exceeding 30 days from the date of the offer within which the offer, if not accepted, shall be deemed to have been declined.
 - (b) Unless the articles of the company otherwise provide, the offer aforesaid shall be deemed to include a right exercisable by the person concerned to renounce the shares offered to him or any of them in favour of any other person; and the notice shall contain a statement of this right.
 - (c) After the expiry of the time specified in the notice aforesaid, or on receipt of earlier intimation from the person to whom such notice is given that he declines to accept the shares offered, the Board of Directors may dispose of them in such manner which is not disadvantageous to the share holders and the company.
- (2) **To employees** under a scheme of employees stock option by passing special resolution and complying with prescribed conditions.
- (3) **To other persons**, if it is authorized by a special resolution, either for cash or for a consideration other than cash, if the price of such shares is determined by the valuation report of a registered valuer, subject to the compliance with the applicable provisions and any other prescribed conditions.

Q. 14. State the conditions to be fulfilled for issue of bonus shares by a company. [Dec. 2013 (5 Marks)], [Dec. 2016 (5 Marks)]

Or

What are the conditions to be complied by the company to issue bonus shares? [Dec. 2018 (5 Marks)]

Or

What are the main sources of issue fully paid-up bonus shares as per Companies Act, 2013? [Dec. 2021 (3 Marks)]

Ans.

Issue of bonus shares [Section 63(1)]: A company may issue fully paid-up bonus shares to its members out of:

- (a) Free reserves
- (b) Securities premium
- (c) Capital redemption reserve

However, revaluation reserve created by the revaluation of assets cannot be used for the bonus issue.

Conditions for issue of bonus shares [Section 63(2)]: A company shall comply with following additional condition for bonus shares:

- (1) Bonus issue is authorized by its articles.
- (2) Bonus issue is made on the recommendation of the Board and authorization from general meeting of the company.
- (3) Company has not defaulted in payment of interest or principal in respect of fixed deposits or debt securities issued by it.
- (4) Company has not defaulted in payment of statutory dues of the employees like PF contribution, gratuity and bonus.
- (5) Bonus issue can be made only on fully paid up shares.
- (6) Company also has to comply with other prescribed conditions.
- (7) Bonus shares shall not be issued in lieu of dividend.

The company which has once announced the decision of its Board recommending a bonus issue, shall not subsequently withdraw the same. [Rule 14 of the Companies (Share Capital & Debentures) Rules, 2014]

Q. 15. Distinguish between: Bonus Shares & Right Shares
[June 2011 (3 Marks)], [June 2018 (5 Marks)]

Ans.

Following are the main points of distinction between bonus shares & right shares:

Point	Bonus Shares	Right Shares
Meaning	Bonus shares are shares issued by a company free of cost to its existing shareholders on a prorata basis out of free reserve.	When company issues further shares to existing shareholder in ratio of their holding such issue is known as right issue.
Cash flow	In case of bonus issue there is no cash flow.	In case of right issue there is cash inflow to the company.
Consideration	Company does not receive any consideration in case of bonus issue.	Company received consideration as shares are issued against cash.
Authorization	Bonus issue is made on the recommendation of the Board and authorization from general meeting of the company.	In case of right issue authorization from members through ordinary or special resolution is necessary.
Market value	Issue of bonus shares does not affect the market value of the company.	Right issue of shares affects the market value of the company.
Section	It is governed by Section 63 of the Companies Act, 2013.	It is governed by Section 62 of the Companies Act, 2013.

PROBLEMS & SOLUTIONS

Problem No. 20] The Balance Sheet of Zed Ltd. as on 31st March, 2020 was as follows:

LIABILITIES	₹	ASSETS	₹
<i>Issued & Paid-Up Capital:</i>		Freehold Property	2,00,000
20,000 Equity Shares of ₹ 10 each	2,00,000	Stock	1,20,000
Profit & Loss Account	1,80,000	Sundry Debtors	1,00,000
10% Debentures (₹ 100)	1,20,000	Cash At Bank	1,80,000
Sundry Creditors	1,00,000		
	6,00,000		6,00,000

It was resolved at the annual general meeting:

- (i) To pay a dividend of 10% and corporate dividend tax @ 12.5% and surcharge of 10% and 2% education cess.
- (ii) To issue one bonus share for every four shares held.
- (iii) To give existing shareholders the option to buy one share of ₹ 10 @ ₹ 14 for every four shares held prior to the bonus issue.
- (iv) To redeem the debentures at a premium of 5%. All the debenture holders took up the option.

Pass necessary journal entries.

[Dec. 2010 & June 2012 (9 Marks)]

Ans.

$$\text{Right shares to be issued} = 20,000 \times \frac{1}{4} = 5,000 \text{ shares}$$

$$\text{Bonus shares to be issued} = (20,000 + 5,000) \times \frac{1}{4} = 6,250 \text{ shares}$$

In the books of Zed Ltd.

Journal Entries

Date	Particulars		Dr. (₹)	Cr. (₹)
	Profit & Loss A/c	Dr.	22,805	
	To Dividend A/c (20,000 × 10%)			20,000
	To Corporate Dividend Tax A/c (20,000 × 14.025%)			2,805
	(Being, dividend @ 10% on paid up capital was declared as per shareholders resolution No. dated and corporate dividend tax @ 14.025% payable on it provided in accounts.)			
	Dividend A/c	Dr.	20,000	
	Corporate Dividend Tax A/c	Dr.	2,805	
	To Bank A/c			22,805
	(Being, dividend declared and corporate dividend tax paid.)			

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c (5,000 × 14) To Share Capital A/c (5,000 × 10) To Securities Premium A/c (5,000 × 4) (Being, 5,000 equity shares of ₹ 10 each issued at ₹ 14 per share as per shareholders resolution No. dated) Dr.	70,000	50,000 20,000
	Profit & Loss A/c To Bonus to Shareholders Account (Being, issue of 6,250 bonus shares in ratio of 1:4 as per shareholders resolution No. dated) Dr.	62,500	62,500
	Bonus to Shareholders A/c To Equity Share Capital A/c (Being, balance of bonus to shareholder transferred to equity share capital account.) Dr.	62,500	62,500
	6% Debenture A/c Premium on Redemption of Debenture A/c To Bank A/c (Being, 1,000 Debentures are redeemed along with premium @ 5%) Dr.	1,20,000	
	Profit & Loss A/c To Premium on Redemption of Debenture A/c (Being, premium on redemption of debenture adjusted against profit & loss account balance.) Dr.	6,000	1,26,000 6,000

Calculation of corporate dividend tax rate:

Basic rate	12.50
(+) Surcharge (12.50 × 10%)	1.25
(+) Education Cess (13.75 × 2%)	0.27
	14.02

Problem No. 21] The Balance Sheet of A Ltd. as at 31.3.2024 is as following:

Liabilities	₹	Assets	₹
Authorized share capital:			
1,50,000 Equity Shares of ₹ 10 each	15,00,000	Sundry Assets	17,00,000
Issued, Subscribed & Paid-up Capital:			
₹ 7.50 each called-up & paid-up	6,00,000		
Reserves:			
Capital Redemption Reserve	1,50,000		
Plant Revaluation Reserve	20,000		
Securities Premium	1,50,000		
Development Rebate Reserve	2,30,000		
Investment Allowance Reserve	2,50,000		
General Reserve	3,00,000		
	<u>17,00,000</u>		<u>17,00,000</u>

The company wanted to issue bonus shares to its shareholders @ one share for every two shares held.

Necessary resolutions were passed. Requisite legal requirements were complied with. You are required to:

(a) Give effect to the proposal by passing journal entries in the books of A Ltd.

(b) Show the amended Balance Sheet.

[Dec. 2011 (6 Marks)]

Ans.

$$\text{Existing No. of shares} = \frac{6,00,000}{7.5} = 80,000 \text{ shares}$$

Calculation of number of bonus shares to be issued:

$$80,000 \times \frac{1}{2} = 40,000 \text{ shares}$$

In the books of A Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Equity Share Final Call A/c (80,000 × 2.5) Dr. To Equity Share Capital A/c (Being, share final call of ₹ 2.5 due on 80,000 equity shares as per Boards Resolution No. dated)	2,00,000	2,00,000
	Bank A/c Dr. To Equity Share Final Call A/c (Being, share final call money received)	2,00,000	2,00,000
	Capital Redemption Reserve A/c Dr. Securities Premium A/c Dr. General Reserve A/c Dr. To Bonus to Shareholders A/c (Being, 40,000 shares @ ₹ 10 issued as bonus shares to existing shareholder as per shareholders Resolution No. dated)	1,50,000 1,50,000 1,00,000	4,00,000
	Bonus to Shareholders A/c Dr. To Equity Share Capital A/c (Being, balance to bonus to shareholders account transferred to share capital account)	4,00,000	4,00,000

Balance Sheet of A Ltd.

EQUITY & LIABILITIES	₹
Shareholder's Funds	
Equity Share Capital (1,20,000 Shares of ₹ 10 each)	12,00,000
Plant Revaluation Reserve	20,000
Development Rebate Reserve	2,30,000
Investment Allowance Reserve	2,50,000

General Reserve	2,00,000
Non-Current Liabilities	
Current Liabilities	19,00,000
ASSETS	
Non-Current & Current Assets	
Sundry Assets	17,00,000
Bank Balance	2,00,000
	19,00,000

Problem No. 22] Fitness Ltd. is planning to raise funds by making rights issue of equity shares to part finance its expansion. The existing equity share capital of the company is ₹40 lakh and the market value is ₹45 per share. The company offered to its shareholders the right to buy 2 shares at ₹12 each for every 5 shares held. You are required to calculate -

- Theoretical market price per share after the rights issue;
- The value of rights and
- Percentage increase in share capital

[Dec. 2015 (5 Marks)]

Ans.

Market value of 5 shares already held by a shareholder (5 × 45)	225
Add: The price required to be paid for acquiring two more share (2 × 12)	24
Total price of 7 shares	249

$$\text{Average price of one share} = \frac{249}{7} = 35.57$$

Market Value - Average Price = Value of right

$$45 - 35.57 = 9.43$$

Alternative formula:

$$\frac{\text{Right shares}}{\text{Total shares after right issue}} \times (\text{Cum rights price} - \text{New issue price})$$

$$\frac{2}{7} \times (45 - 12) = 9.43$$

The company offered to its shareholders the right to buy 2 for every 5 shares held.

Hence, percentage increase in share capital = $\frac{2}{5} \times 100 = 40\%$

Problem No. 23] Following is the extract of balance sheet of Sunrise Ltd. as on 31st March, 2024:

<i>Issued and subscribed capital:</i>	
40,000, 10% Preference shares of ₹10 each fully paid	4,00,000
1,80,000 Equity shares of ₹10 each, ₹7.50 paid-up	13,50,000
<i>Reserves and surplus:</i>	
Capital reserve	1,60,000
General reserve	2,00,000
Securities premium	40,000
Surplus	3,20,000

The company made the final call of ₹ 2.50 per share from equity shareholders and duly received it. Thereafter, it was decided to capitalize its reserves by issuing bonus shares at the rate of 1 share for every 3 shares held. Capital reserve includes ₹ 80,000 being profit on exchange of machinery. Pass journal entries with necessary assumptions. [June 2016 (5 Marks)]

Ans.

$$\text{Amount required for bonus issue} = 18,00,000 \times \frac{1}{3} = 6,00,000$$

In the books of Sunrise Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Equity Share Final Call A/c (1,80,000 × 2.5) Dr. To Equity Share Capital A/c (Being, final call due on 1,80,000 equity shares @ ₹ 2 each as per Board Resolution No. dated))	4,50,000	4,50,000
	Bank A/c Dr. To Equity Share Final Call A/c (Being, final call received)	4,50,000	4,50,000
	Surplus A/c Dr. Securities Premium A/c Dr. General Reserve A/c Dr. Capital Reserve A/c Dr.	3,20,000 40,000 2,00,000 40,000	
	To Bonus to Shareholder A/c (Being, bonus issue approved to shareholders in 1 share for every 3 shares held)		6,00,000
	Bonus to Shareholders A/c Dr. To Equity Share Capital A/c (Being, balance to Bonus to Shareholders A/c credited to Share Capital A/c)	6,00,000	6,00,000

Problem No. 24] Following is the extract of the Balance Sheet of Prasann Ltd. (an unlisted company) as on 31st March, 2018:

PARTICULARS	(₹)
Authorized Capital:	
12,000 10% Preference shares of ₹100 each	12,00,000
2,00,000 Equity shares of ₹10 each	20,00,000
	<u>32,00,000</u>
Issued, Subscribed & Paid-up Capital:	
12,000 10% Preference shares of ₹100 each fully paid-up	12,00,000
1,20,000 Equity shares of ₹10 each ₹8 paid-up	9,60,000
Reserves and Surplus:	
Securities Premium (Collected otherwise than in cash)	50,000
Capital Redemption Reserve	75,000
General Reserve	2,25,000
Profit & Loss (Surplus)	3,50,000

On 1st April, 2018, the company made final call @ ₹2 per share on 1,20,000 equity shares. The call money was received by 20th April, 2018. Thereafter, the company decided to capitalize its reserves by way of bonus issue at the rate of one share for every three shares held. It was decided that there should be the minimum reduction in the balance of profit and loss (Surplus).

Show necessary journal entries in the books of the company and prepare the extract of the Balance Sheet as on 30th April, 2018 after bonus issue. [June 2019 (5 Marks)]

Ans.

In the books of Prasann Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
1-4-2018	Equity Share Final Call A/c (1,20,000 × 2) Dr. To Equity Share Capital A/c (Being, final call of ₹2 per share on 1,20,000 equity shares due as per Board Resolution No. dated)	2,40,000	2,40,000
20-4-2018	Bank A/c Dr. To Equity Share Final Call A/c (Being, equity share final call money received)	2,40,000	2,40,000
	Securities Premium A/c Dr.	50,000	
	Capital Redemption Reserve A/c Dr.	75,000	
	General Reserve A/c Dr.	2,25,000	
	Profit & Loss A/c Dr. To Bonus to Shareholders A/c (Being, 40,000 shares @ ₹10 issued as bonus shares to equity shareholders as per Shareholders Resolution No. dated)	50,000	4,00,000
	Bonus to Shareholders A/c Dr. To Equity Share Capital A/c (Being, balance to bonus to shareholders account transferred to share capital account)	4,00,000	4,00,000

Balance Sheet of Prasann Ltd. [Extract]

EQUITY & LIABILITIES	Note	₹
Shareholder's Funds		
Equity Shares Capital of ₹10 each		28,00,000
Reserve & Surplus		3,00,000

Notes to Accounts:

1. Share Capital:

Particulars	₹
Authorized Capital:	
12,000 10% Preference shares of ₹100 each	12,00,000

(2) Firm underwriting shares are treated as marked application:

Particulars	A	B	C	Total
Gross liability	xxxx (xxxx)	xxxx (xxxx)	xxxx (xxxx)	xxxx (xxxx)
Less: Marked application (including firm underwriting)	(xxxx)	(xxxx)	(xxxx)	(xxxx)
Less: Unmarked application	xxxx (xxxx)	xxxx (xxxx)	xxxx (xxxx)	xxxx (xxxx)
Credit for over subscription	xxxx (xxxx)	xxxx (xxxx)	xxxx (xxxx)	xxxx (xxxx)
Add: Firm underwriting	xxxx	xxxx	xxxx	xxxx
Net liability	xxxx	xxxx	xxxx	xxxx

Q. 17. Differentiate Between: Marked applications & unmarked applications in case of underwriting of shares. [June 2003 (3 Marks)], [Dec. 2008 (3 Marks)]

Ans. Applications bearing the stamp of the respective underwriter are called as marked application, while application received directly by company which do not bare stamp of any underwriter are called as unmarked application.

Marked applications as well as unmarked applications are required to be deducted from gross liability while calculating net liability of underwriter.

Q. 18. Distinguish between: Underwriting Commission and Brokerage. [Dec. 2008 (3 Marks)], [Dec. 2012 (4 Marks)]

Ans. Underwriting Commission: Underwriters undertake the to find buyers who are willing to buy shares or debentures and guarantees the sale of shares or debentures and the amount paid to underwriters is known as underwriting commission.

Brokerage: A broker undertakes only to find buyers who are willing to buy shares or debentures and does not guarantee the sale of shares or debentures and amount paid to brokers for their services is known as brokerage.

Q. 19. State the conditions for payment of underwriting commission as per the Companies (Prospectus & Allotment of Securities) Rules, 2014.

[June 2021 (5 Marks)]

Ans.

Underwriting Commission: The amount payable to the underwriters for underwriting the issue of shares or debentures of a company is called underwriting commission. It is paid at specified rate on the issue price.

To whom underwriting commission can be paid [Section 40(6)]: A company may pay commission to any person in connection with the subscription to its securities subject to such conditions as may be prescribed.

Payment of underwriting commission: As per Rule 13 of the Companies (Prospectus & Allotment of Securities) Rules, 2014, a company may pay commission to any person in connection with the subscription or procurement of subscription to its securities, whether absolute or conditional, subject to the following conditions:

(a) The payment of commission shall be authorized by the company's articles of association.

- (b) The commission may be paid out of *proceeds of the issue* or the *profit* of the company or *both*.
- (c) The rate of commission paid or agreed to be paid shall not exceed:
- **In case of shares:** 5% of issue price or rate authorized by articles, *whichever is less*.
 - **In case of debentures:** 2.5% of issue price or rate specified in articles, *whichever is less*.
- (d) The prospectus of the company shall disclose the following:
- Name of the underwriters.
 - Rate and amount of the commission payable to the underwriter.
 - Number of securities which is to be underwritten or subscribed by the underwriter absolutely or conditionally.
- (e) There shall not be paid commission to any underwriter on securities which are not offered to the public for subscription.
- (f) A copy of the contract for the payment of commission is delivered to the Registrar at the time of delivery of the prospectus for registration.

PROBLEMS & SOLUTIONS

Problem No. 25] Super India Ltd. issued 75,000 equity shares. The whole of the issue was underwritten as follows:

A - 50%, B - 25%, and C - 25%.

Applications for 60,000 shares were received in all, out of which applications for 15,000 shares bear the stamp of A, those for 7,500 shares that of B and those for 15,000 shares that of C. The remaining applications for 22,500 shares did not bear any stamp.

Determine the liability of the underwriters.

[June 2013 (5 Marks)]

Ans. Statement showing underwriters liability

Particulars	A 50%	B 25%	C 25%	Total 100%
Gross liability	37,500	18,750	18,750	75,000
(-) Marked application	(15,000)	(7,500)	(15,000)	(37,500)
(-) Unmarked application	(11,250)	(5,625)	(5,625)	(22,500)
	11,250	5,625	(1,875)	15,000
Credit for over subscription of C (50:25=75)	(1,250)	(625)	1,875	-
Net liability	10,000	5,000	-	15,000

Problem No. 26] A company incorporated on 1st January, 2013 issued a prospectus inviting applications for 5,00,000 equity shares of ₹ 10 each. The whole issue was fully underwritten by four underwriters:

Underwriter - A: 2,00,000 shares

Underwriter - B: 1,50,000 shares

Underwriter - C: 1,00,000 shares

Underwriter - D: 50,000 shares

Applications were received for 4,50,000 shares of which marked applications were as follows:

Underwriter - A:	2,20,000
Underwriter - B:	90,000
Underwriter - C:	1,10,000
Underwriter - D:	10,000

Find out the liability of each underwriter individually. [Dec. 2013 (5 Marks)]

Ans.

Data given in problem can be arranged as follows:

Underwriters	Firm Application	Marked Application	Total
A	-	2,20,000	2,20,000
B	-	90,000	90,000
C	-	1,10,000	1,10,000
D	-	10,000	10,000
	-	4,30,000	4,30,000
Unmarked application (4,50,000 - 4,30,000)			20,000
Shares not applied [Bal. Fig.]			4,50,000
No. of shares issued			5,00,000

Statement showing underwriters liability:

Particulars	A	B	C	D	Total
Gross liability	2,00,000	1,50,000	1,00,000	50,000	5,00,000
(-) Marked application	(2,20,000)	(90,000)	(1,10,000)	(10,000)	(4,30,000)
(-) Unmarked application (20:15:10:5)	(8,000)	(6,000)	(4,000)	(2,000)	(20,000)
Credit for A (15:5 = 20)	(28,000)	54,000	(14,000)	38,000	50,000
Credit for C (15:5 = 20)	28,000	(21,000)	-	(7,000)	-
	-	(10,500)	14,000	(3,500)	-
(+) Firm underwriting	-	22,500	-	27,500	50,000
Net liability	-	-	-	-	-
	-	22,500	-	27,500	50,000

Problem No. 27] Sun Ltd. issued 1,00,000 equity shares. The whole of the issue was underwritten as follows:

Marigold	35%
Lotus	25%
Tulip	30%
Lily	10%

Applications for 80,000 shares were received in all; out of which applications for 20,000 shares had the stamp of Marigold; 15,000 that of Lotus; 22,000 that of Tulip and 8,000 of Lily. The remaining 15,000 applications did not bear any stamp. Determine the liability of each underwriter. [Dec. 2014 (5 Marks)]

Ans.

Data given in problem can be arranged as follows:

Underwriters	Firm Application	Marked Application	Total
Marigold	-	20,000	20,000
Lotus	-	15,000	15,000
Tulip	-	22,000	22,000
Lily	-	8,000	8,000
	-	65,000	65,000
(+*) Unmarked application (80,000 - 65,000)			15,000
Shares not applied [Bal. Fig.]			80,000
No. of shares issued			20,000
			1,00,000

Statement showing underwriters liability:

Particulars	Marigold 35%	Lotus 25%	Tulip 30%	Lily 10%	Total 100%
Gross Liability	35,000	25,000	30,000	10,000	1,00,000
(-) Marked application	(20,000)	(15,000)	(22,000)	(8,000)	(65,000)
(-) Unmarked application (35:25:30:10)	(5,250)	(3,750)	(4,500)	(1,500)	(15,000)
Net liability	9,750	6,250	3,500	500	20,000

Problem No. 28] Metal Ltd. issued 1,25,000 shares of ₹ 10 each to public. The issue was underwritten by Gold, Silver, Bronze and Copper as under:

Gold 30%, Silver 25%, Bronze 25% and Copper 20%.

The issue was firm underwritten by the underwriters as under:

Gold: 4,000 shares; Silver : 6,000 shares; Bronze: Nil; Copper: 15,000 shares.

Public subscription excluding firm underwriting but including marked applications were 90,000 shares. The applications were marked as under:

Gold : 24,000 shares

Silver : 20,000 shares

Bronze : 12,000 shares

Copper : 24,000 shares

Ascertain the liability of each underwriter, assuming firm underwriting shares be treated as unmarked applications. [Dec. 2016 (5 Marks)]

Ans. Data given in problem can be arranged as follows:

Underwriters	Firm Application	Marked Application	Total
Gold	4,000	24,000	28,000
Silver	6,000	20,000	26,000
Bronze	-	12,000	12,000
Copper	15,000	24,000	39,000
	25,000	80,000	1,05,000

Underwriters	Firm Application	Marked Application	Total
Unmarked application (90,000 - 80,000)			10,000
Shares not applied [Bal. Fig.]			1,15,000
No. of shares issued			1,25,000

Statement showing underwriters liability:

Particulars	Gold 30%	Silver 25%	Bronze 25%	Copper 20%	Total
Gross liability	37,500	31,250	31,250	25,000	1,25,000
(-) Marked application	(24,000)	(20,000)	(12,000)	(24,000)	(80,000)
(-) Unmarked application (30:25:25:20)	(10,500)	(8,750)	(8,750)	(7,000)	(35,000)
Credit for Copper (30:25:25 = 80)	3,000	2,500	10,500	(6,000)	10,000
	(2,250)	(1,875)	(1,875)	6,000	
(+) Firm underwriting	750	625	8,625	-	10,000
Net liability	4,000	6,000	-	15,000	25,000
	4,750	6,625	8,625	15,000	35,000

Calculation of net unmarked application:

Unmarked application	10,000
Add: Firm underwriting	25,000
	<u>35,000</u>

Problem No. 29] M Ltd. issued 30,00,000 equity shares of ₹ 10 each at par. Out of these 12,00,000 shares were issued to the promoters and the balance offered to the public were underwritten by three Underwriters A, B & C in the Ratio of 2:3:4 with a firm underwriting of 60,000, 50,000 & 70,000 shares respectively. Total subscription received 15,38,000 shares including marked applications and excluding the firm underwriting. Marked applications were as followed:

- A 3,00,000
B 3,50,000
C 5,00,000

Unmarked and surplus applications are to be distributed in the gross liability ratio. Ascertain the liability of each underwriter. [June 2017 (5 Marks)]

Ans.

In given problem wording used is "excluding firm underwriting"

Data given in problem can be arranged as follows:

Underwriters	Firm Application	Marked Application	Total
A	60,000	3,00,000	3,60,000
B	50,000	3,50,000	4,00,000
C	70,000	5,00,000	5,70,000
	1,80,000	11,50,000	13,30,000

Underwriters	Firm Application	Marked Application	Total
Unmarked application (15,38,0000 – 11,50,000)			3,88,000
Shares not applied [Bal. Fig.]			17,18,000
No. of shares issued to public			82,000
			18,00,000

Method 1: Underwriters liability - when firm underwriting is treated as unmarked application:

Particulars	A	B	C	Total
Gross liability	4,00,000	6,00,000	8,00,000	18,00,000
(-) Marked application	(3,00,000)	(3,50,000)	(5,00,000)	(11,50,000)
(-) Unmarked application (2:3:4)	(1,26,222)	(1,89,333)	(2,52,445)	(5,68,000)
	(26,222)	60,667	47,555	82,000
Credit for over subscription of A (3:4)	26,222	(11,238)	(14,984)	-
	-	49,429	32,571	82,000
(+) Firm underwriting	60,000	50,000	70,000	1,80,000
Net liability	60,000	99,429	1,02,571	2,62,000

* Calculation of net unmarked application:

Unmarked application	3,88,000
Add: Firm underwriting	1,80,000
	<u>5,68,000</u>

Method 2: Underwriters liability - when firm underwriting is treated as marked application:

Particulars	A	B	C	Total
Gross liability	4,00,000	6,00,000	8,00,000	18,00,000
(-) Marked application (including firm underwriting)	(3,60,000)	(4,00,000)	(5,70,000)	(13,30,000)
(-) Unmarked application (2:3:4)	(86,222)	(1,29,333)	(1,72,445)	(3,88,000)
	(46,222)	70,667	57,555	82,000
Credit for over subscription of A (3:4)	46,222	(19,809)	(26,413)	-
	-	50,858	31,142	82,000
(+) Firm underwriting	60,000	50,000	70,000	1,80,000
Net liability	60,000	1,00,858	1,01,142	2,62,000

Note: Students have to solve the problem only under one of the method.

Problem No. 30] Pina Ltd. issued to public 2,00,00,000 equity shares of ₹10 each at 25% premium which was payable ₹6 per share on application and the balance on allotment. The issue was underwritten by Poova Underwriters Ltd. for a maximum commission as per section 40(6) read with Rule 13 of the Companies Act, 2013.

The public subscribed for 1,45,00,000 equity shares and the rest had to be taken up by the Poova Underwriters Ltd. At the end of the year these shares were quoted in the share market at ₹10.15 per share.

You are required to prepare the necessary ledger accounts in the books of underwriter.

[Dec. 2018 (5 Marks)]

Ans.

Calculation of underwriting commission:

$2,00,00,000 \times 12.5 \times 5\% = 1,25,00,000$ i.e. 12,500 thousand

No. of shares taken by Poova Underwriters Ltd.:

$2,00,00,000 - 1,45,00,000 = 55,00,000$

Calculation of loss on Quoted Price:

Particulars	₹ in '000
Cost of shares taken ($55,00,000 \times 12.5 = 6,87,50,000$)	68,750
(-) Underwriting commission	(12,500)
(-) Quoted Price ($55,00,000 \times 10.15 = 5,58,25,000$)	(55,825)
Loss	42,025

Dr. Underwriting Commission A/c (₹ in '000)

To Equity Shares in Pina Ltd. A/c	12,500	By Pina Ltd. A/c	12,500
	12,500		12,500

Dr. Equity Shares in Pina Ltd.

To Pina Ltd. A/c	68,750	By Underwriting Commission A/c	12,500
		By Profit & Loss A/c	42,025
		By Balance c/d	55,825
	68,750		68,750

Dr. Pina Ltd. A/c

To Underwriting Commission A/c	12,500	By Equity Shares in Pina Ltd. A/c	68,750
To Bank A/c	56,250		
	68,750		68,750

Problem No. 31] Beta Ltd. came up with an issue of 45,00,000 equity shares of ₹11 each at par. 30% of the issue was reserved for the promoters and the balance was offered to the general public. The entire amount being asked for with the applications R, S and T agreed to underwrite the public issue in the ratio of 3:1:1 respectively, and also agreed to firm underwriting of 90,000; 60,000 and 30,000 shares respectively. The underwriting commission was fixed at 2%. The marked applications were as follows:

R — 16,50,000 shares; S — 6,00,000 shares; T — 4,50,000 shares.

Unmarked applications excluding for shares underwritten firm totalled were 1,50,000 shares.

You are required to ascertain the liability of each of the underwriters. Also calculate the underwriting commission payable to the different underwriters.

[Dec. 2019 (5 Marks)]

Ans.

Data given in problem can be arranged as follows:

Underwriters	Firm Application	Marked Application	Total
R	90,000	16,50,000	17,40,000
S	60,000	6,00,000	6,60,000
T	30,000	4,50,000	4,80,000
	1,80,000	27,00,000	28,80,000
Unmarked application			1,50,000
Shares not applied (Bal. Fig.)			30,30,000
No. of shares issued [45,00,000 × 70%]			1,20,000
			31,50,000

Underwriter's liability - When firm underwriting is treated as unmarked application:

Particulars	R	S	T	Total
Gross liability (3:1:1)	18,90,000	6,30,000	6,30,000	31,50,000
(-) Marked application	(16,50,000)	(6,00,000)	(4,50,000)	(27,00,000)*
(-) Unmarked application (3:1:1)	(1,98,000)	(66,000)	(66,000)	(3,30,000)
Credit for over subscription of S (3:1)	42,000	(36,000)	1,14,000	1,20,000
	(27,000)	36,000	(9,000)	-
(+) Firm underwriting	15,000	-	1,05,000	1,20,000
Net liability	90,000	60,000	30,000	1,80,000
	1,05,000	60,000	1,35,000	3,00,000

* Calculation of net unmarked application:

Unmarked application	1,50,000
(+) Firm underwriting	1,80,000
	<u>3,30,000</u>

Calculation of underwriting commission:

$$R = 18,90,000 \times 10 \times 2\% = 3,78,000$$

$$S = 6,30,000 \times 10 \times 2\% = 1,26,000$$

$$T = 6,30,000 \times 10 \times 2\% = 1,26,000$$

Problem No. 32] XYZ Ltd. issued 1,50,000 equity shares of ₹10 each to public. The issue was underwritten by A, B, C and D as under:

A 30%, B 25%, C 25% and D 20%

The issue was firm underwritten by the underwriters as under:

A: 6,000 shares, B: 8,000 shares, C: Nil, D: 16,000 shares

Public subscription excluding firm underwriting but including marked applications were 1,10,000 shares. The marked applications were as under:

- A 30,000 shares
 B 23,000 shares
 C 17,000 shares
 D 25,000 shares

Ascertain the liability of each underwriter (No. of shares), assuming firm underwriting shares be treated as unmarked applications. [Dec. 2020 (5 Marks)]

Ans.

Data given in problem can be arranged as follows:

Underwriters	Firm Application	Marked Application	Total
A	6,000	30,000	36,000
B	8,000	23,000	31,000
C	-	17,000	17,000
D	16,000	25,000	41,000
	30,000	95,000	1,25,000
Unmarked application (1,10,000 - 95,000)			15,000
Shares not applied [Bal. Fig.]			1,40,000
No. of shares issued			10,000
			1,50,000

Underwriter's liability - When firm underwriting is treated as unmarked application

Particulars	A	B	C	D	Total
Gross liability (30:25:25:20)	45,000	37,500	37,500	30,000	1,50,000
(-) Marked application	(30,000)	(23,000)	(17,000)	(25,000)	(95,000)
(-) Unmarked application (30:25:25:20)	(13,500)	(11,250)	(11,250)	(9,000)	(45,000)
Credit for over subscription of D (30:25:25)	1,500	3,250	9,250	(4,000)	10,000
	(1,500)	(1,250)	(1,250)	4,000	
(+) Firm underwriting	-	2,000	8,000	-	10,000
	6,000	8,000	-	16,000	30,000
Net liability	6,000	10,000	8,000	16,000	40,000

* Calculation of net unmarked application:

Unmarked application	15,000
(+) Firm underwriting	30,000
	<u>45,000</u>

Problem No. 33] Aarvi Ltd. 20,000 shares which were underwritten as follows: X: 12,000 shares; Y: 5,000 shares and Z: 3,000 shares.

The underwriters made applications for firm underwriting as under:

X: 1,600 shares; Y: 600 shares and Z: 2,000 shares.

The total subscription excluding firm underwriting (including marked applications) were 10,000 shares.

The marked applications were X: 2,000 shares; Y: 4,000 shares and Z: 1,000 shares.

Prepare a statement showing the net liability of underwriters.

[Dec. 2021 (5 Marks)]

Ans.

Data given in problem can be arranged as follows:

Underwriters	Firm Application	Marked Application	Total
X	1,600	2,000	3,600
Y	600	4,000	4,600
Z	2,000	1,000	3,000
	4,200	7,000	11,200
Unmarked application (10,000 - 7,000)			3,000
Shares not applied [Bal. Fig.]			14,200
No. of shares issued			5,800
			20,000

Method 1 - When firm underwriting is treated as unmarked application:

Particulars	X	Y	Z	Total
Gross liability	12,000	5,000	3,000	20,000
(-) Marked application	(2,000)	(4,000)	(1,000)	(7,000)*
(-) Unmarked application (12:5:3)	(4,320)	(1,800)	(1,080)	(7,200)
Credit for over subscription of B (12:3)	5,680	(800)	920	5,800
	(640)	800	(160)	-
(+) Firm underwriting	5,040	-	760	5,800
Net liability	1,600	600	2,000	4,200
	6,640	600	2,760	10,000

* Calculation of net unmarked application:

Unmarked application	3,000
Add: Firm underwriting	4,200
	<u>7,200</u>

Method 2 - When firm underwriting is treated as marked application:

Particulars	X	Y	Z	Total
Gross liability	12,000	5,000	3,000	20,000
(-) Marked application (including firm underwriting)	(3,600)	(4,600)	(3,000)	(11,200)
(-) Unmarked application (12:5:3 = 20)	(1,800)	(750)	(450)	(3,000)
Credit for over subscription of B&C	6,600	(350)	(450)	5,800
	(800)	350	450	-
(+) Firm underwriting	5,800	-	-	5,800
	1,600	600	2,000	4,200
Net Liability	7,400	600	2,000	10,000

NOTE: Students have to solve the problem only under one of the method.

5

CHAPTER

ACCOUNTING FOR DEBENTURES

THEORETICAL QUESTIONS

Q. 1. Write a short note on: Loss on issue of debentures [Dec. 2008 (5 Marks)]

Ans. If a company issues debentures at par or at a discount which are redeemable at a premium, the premium payable on redemption of the debentures should also be treated as capital loss and as such it should be dealt with in the same manner as discount on issue of debentures.

Redemption of debentures at a premium is a known loss at the time of issue of debentures as the terms of issue generally contain such provision for redemption. As such, it would be prudent to write off such loss during the life time of the debentures.

Q. 2. Distinguish between: Shares & Debentures [June 2009 (5 Marks)]

Ans. Following are the main points of distinction between shares & debentures:

Points	Shares	Debentures
Status	Shareholders are the owners of the company.	Debenture holders are the creditors of the company.
Voting rights	Shareholders have voting rights .	Debenture holders have no voting rights .
Rate of income	Dividend on equity shares is paid at a variable rate .	Debenture interest is paid at a pre-determined fixed rate .
Treatment against profit	Dividends are appropriation of profits .	Interest on debentures is the charge against profits .
Types	There are only two kinds of shares - equity shares and preference shares.	There are different kinds of debentures, such as Secured/ Unsecured, Redeemable/Irredeemable, Registered/ Bearer, Convertible/Non-convertible, etc
Balance sheet presentation	In the company's balance sheet, shares are shown under " Shareholders Funds ".	In the company's balance sheet, debentures are shown under " Non-Current Liabilities ".
Conversion	Shares cannot be converted into debentures in any circumstances.	Debentures can be converted into shares as per the terms of issue of debenture.

Points	Shares	Debentures
Forfeiture	Shares can be forfeited for non-payment of allotment and call moneys.	Debentures cannot be forfeited for non-payment of call moneys.
Liquidation	At the time of liquidation shareholders are paid at last, after paying debenture holders, creditors, etc.	At the time of liquidation, debenture holders are paid-off before the shareholders.

Q. 3. Give the journal entries for purchase of debentures for immediate cancellation. [June 2011 (3 Marks)]

Ans. If authorized by its articles of association, a company can buy its own debentures in the open market for immediate cancellation.

Accounting entries in such a case will be as follows.

(a) Where no sinking fund exists:

Date	Particulars	Dr. (₹)	Cr. (₹)
	On purchase and cancellation of debentures:		
	Debentures A/c	Dr.	
	To Bank A/c		

Note: If there is any difference between the nominal value of the debentures cancelled and the price paid for them, the same has to be treated as profit or loss on cancellation and should be credited or debited to "Profit on Redemption of Debentures Account". Thus, the entry for this will be as follow.

	In case of profit:		
	Debentures A/c	Dr.	
	To Bank A/c		
	To Profit on Redemption of Debentures A/c		
	In case of loss:		
	Debentures A/c	Dr.	
	Loss on Cancellation of Debentures A/c	Dr.	
	To Bank A/c		

Such profit or loss, being of capital nature, should be transferred to capital reserve account (if profit) or written off against the profit & loss account or securities premium account (if loss). The entry for this will be as follows.

	In case of profit:		
	Profit on Redemption of Debentures A/c	Dr.	
	To Capital Reserve A/c		
	In case of loss:		
	Profit & Loss A/c	Dr.	
	Capital Reserve A/c	Dr.	
	Securities Premium A/c	Dr.	
	To Loss on Redemption of Debentures A/c		

On transfer of profits which would otherwise be available for dividends to DRR:		
Profit & Loss Appropriation A/c	Dr.	
To Debenture Redemption Reserve A/c		

(b) Where debenture redemption fund exists:

On sale of debenture redemption fund investments on profit:		
Bank A/c	Dr.	
To Debenture Redemption Fund Investment A/c		
To Debenture Redemption Fund A/c		
On sale of debenture redemption fund investments on loss:		
Bank A/c	Dr.	
Debenture Redemption Fund A/c		
To Debenture Redemption Fund Investment A/c		
On purchase and cancellation of debentures:		
Debentures A/c	Dr.	
To Bank A/c		
On purchase and cancellation of debentures at profit:		
Debentures A/c	Dr.	
To Bank A/c		
To Debenture Redemption Fund A/c		
On purchase & cancellation of debentures at loss:		
Debentures A/c	Dr.	
Debenture Redemption Fund A/c	Dr.	
To Bank A/c		
On transfer of the nominal value of the debentures cancelled to general reserve:		
Debenture Redemption Fund A/c	Dr.	
To General Reserve A/c		

Q. 4. Explain 'cum-interest' and 'ex-interest' in case of purchase of own debentures? [Dec. 2012 (4 Marks)]

Ans. If the purchase price for the debentures includes interest for the expired period, the quotation is said to be "Cum-interest".

If, on the other hand, the purchase price for the debentures excludes the interest for the expired period, the quotation is said to be "Ex-interest".

Example: If a company purchases of its 9% Debentures of ₹ 100 each at ₹ 95 each on 1st August, 2019 the dates of payment of Interest being 30th September and 31st March, the treatment of the same for "Cum-interest" and "Ex-interest" quotations will be as follows:

In case of cum-interest quotation: If the purchase price of ₹ 95 is taken to be the cum-interest price, it implies that this includes the interest for the expired period of 4 months (i.e. from 1st April, 2019 to 31st July 2019, which amounts:

$$100 \times 9\% \times \frac{4}{12} = 3$$

Therefore, the price actually paid for the debenture should be taken at $(95 - 3) = ₹92$.

The accounting entry in such a case should be as follows:

Date	Particulars	Dr. (₹)	Cr. (₹)
	If debentures are purchased for immediate cancellation		
	Debenture A/c	Dr. 100	
	Debenture Interest A/c	Dr. 3	
	To Bank A/c		95
	To Profit on Cancellation of Debentures A/c		8
	If debentures are purchased as investment:		
	Investment in Own Debentures A/c	Dr. 92	
	Debenture Interest A/c	Dr. 3	
	To Bank A/c		95
	When these own debentures are cancelled in future:		
	9% Debenture A/c	Dr. 100	
	To Investment in Own Debentures A/c		92
	To Profit on Cancellation of Debentures A/c		8

In case of ex-interest quotation: If the purchase price of ₹95 is taken to be the ex-interest price it implies that this does not include the interest for the expired period of 4 months (i.e. from April, 2019 to 31st July, 2019 which amount to

$$100 \times 9\% \times \frac{4}{12} = 3$$

In this case, the price of ₹95 represents the price actually paid for the debentures and the company is required to pay ₹3 for every debenture as interest in addition to the purchase price of ₹3 for every debenture as interest in addition to the purchase price of ₹95. Therefore, the company is required to pay $(95 + 3) = ₹98$ for every debenture in total. The accounting entry in such a case should be as follows:

	If debentures are purchased for immediate cancellation		
	Debentures A/c	Dr. 100	
	Debenture Interest A/c	Dr. 3	
	To Bank A/c		98
	To Profit on Cancellation of Debentures A/c		5
	If debentures are purchased as investment:		
	Investment in Own Debentures A/c	Dr. 95	
	Debenture Interest A/c	Dr. 3	
	To Bank A/c		98
	When these own debentures are cancelled in future:		
	9% Debenture A/c	Dr. 100	
	To Investment in Own Debentures A/c		95
	To Profit on Cancellation of Debentures A/c		5

Note: The profit on cancellation of debenture being capital profits transferred to 'Capital Reserve Account'.

Q. 5. Explain with examples "interest accrued and due" and "interest accrued but not due". How are these items shown in the balance sheet? [Dec. 2015 (5 Marks)]

Ans. Interest on debentures is a charge against the profits. Interest is normally payable half-yearly and it is calculated at the fixed percentage on the nominal value of debentures issued.

A company is liable to deduct TDS at the prescribed rate from the gross amount of interest payable and to pay it to the Government.

If the debentures are tax-free, the income-tax on such interest will be paid by the company itself on behalf of the debenture holders. However, the interest paid by the company has to be grossed up for calculating the interest expense of the company.

Accounting Entries: Following entries are required to be shown in the books of the company to deal with interest on debentures.

Date	Particulars	Dr. (₹)	Cr. (₹)
	On interest becoming due:		
	Debenture Interest A/c Dr.	100	
	To Income-tax Payable A/c		10
	To Debenture Holders A/c		90
	On payment of interest to the debenture holders:		
	Debenture Holders A/c Dr.	90	
	Income-tax Payable A/c Dr.	10	
	To Bank A/c		100
	On transfer of interest to P & L A/c at the end of the year		
	Profit & Loss A/c Dr.	100	
	To Debenture Interest A/c		100

Interest Accrued and Due (outstanding): Suppose a company has issued 13.5% Debentures for ₹ 10,00,000 interest is payable on 30th September and 31st March. The company will pay ₹ 67,500 in every 6 months. Suppose, the company closes its books on 31st March, the interest due on that date may be unpaid. In that case, there will be a liability which will be recorded by the entry:

	On interest becoming due:		
	Debenture Interest A/c Dr.	67,500	
	To Debenture Interest Outstanding A/c		67,500

Interest accrued but not due: Suppose, in the example given above, the company closes its books on 31st December. Interest up to 30th September must have been paid but that up to 31st December is not yet due. For proper accounting, however, interest for 1st October to 31st December (3 months) must be taken into account. Interest for such a period is termed as 'Interest accrued but not due'. The entry for recording this interest is:

On interest becoming accrued:			
Debenture Interest A/c ($10,00,000 \times 13.5\% \times 3/12$)	Dr.	33,750	
To Debenture Interest Accrued but not due A/c			33,750

Note: "Interest accrued and due" and "interest accrued but not due" both are shown in balance sheet under heading "Other Current Liabilities".

Q. 6. What are the provisions regarding creation and adequacy of Debenture Redemption Reserve (DRR) in each of the following cases:

- (i) Listed company.
 - (ii) Unlisted company.
 - (iii) Other companies including manufacturing and infrastructure companies.
- [June 2016 (3 Marks)]

Or

Elaborate the provisions with respect to creation of Debenture Redemption Reserve (DRR).

[June 2019 (5 Marks)]

Ans. Debenture Redemption Reserve [Section 71(4)]: Where debentures are issued by a company, the company shall create a debenture redemption reserve account out of the profits of the company available for payment of dividend and the amount credited to such account shall not be utilized by the company except for the redemption of debentures.

Provisions of the Companies (Share Capital & Debentures) Rules, 2014 in respect of Debenture Redemption Reserve are given below.

Creation of DRR [Rule 7(a)]: Debenture Redemption Reserve shall be created out of profits of the company available for payment of dividend.

DRR for listed company [Rule 7(b)(iii)]: For listed companies, Debenture Redemption Reserve is not required in the following cases:

- (A) In case of public issue of debentures -
 - A. For NBFCs registered under section 45-IA of the RBI Act, 1934 and for Housing Finance Companies registered with National Housing Bank.
 - B. For other listed companies.
- (B) In case of privately placed debentures. [For companies specified in sub-items A & B]

DRR for unlisted company [Rule 7(b)(iv)]: For unlisted companies -

- (A) For NBFCs registered under section 45-IA of the RBI Act, 1934 and for Housing Finance Companies registered with National Housing Bank, Debenture Redemption Reserve is not required in case of privately placed debentures.
- (B) For other unlisted companies, the adequacy of Debenture Redemption Reserve shall be 10% of the value of the outstanding debentures.

DRR only for non-convertible portion [Rule 7(c)]: In case of partly convertible debentures, Debenture Redemption Reserve shall be created in respect of non-convertible portion of debentures.

Utilization of DRR [Rule 7(d)]: The amount credited to Debenture Redemption Reserve shall not be utilized by the company except for the purpose of redemption of debentures.

Q. 7. Distinguish between: Redemption of preference shares & Redemption of debentures. [June 2018 (4 Marks)]

Ans. Following are the main points of distinction between Redemption of shares & Redemption of debentures:

Points	Redemption of Preference Shares	Redemption of debentures
Nature	Redemption of preference shares is payment to owner of the company.	Redemption of debentures amount to repayment of loan as debenture holders who are creditors of the company.
When redeemed	Preference shares are liable to be redeemed within a period not exceeding 20 years from the date of their issue. However, a company engaged in the setting-up and dealing with of infrastructural projects may issue preference shares for a period exceeding 20 years but not exceeding 30 years , subject to the redemption of a minimum 10% of such preference shares per year from the 21st year onwards or earlier, on proportionate basis, at the option of the preference shareholders.	Redeemable debentures are required to be redeemed within period specified in offer document.
Funds for redemption	Preference shares shall be redeemed: (a) Out of the profits of the company which would otherwise be available for dividend. (b) Out of the proceeds of a fresh issue of shares. (c) Partly out the profits of the company and partly out of the proceeds of a fresh issue of shares.	Debentures can be redeemed out of Debenture Redemption Reserve which is created out of profits of the company which would otherwise be available for dividend.
Reserves	Where preference shares are proposed to be redeemed out of the profits a sum equal to the nominal amount of the shares should be transferred to the Capital Redemption Reserve Account.	For the purpose of redemption of debentures the company is required to comply with creation of Debenture Redemption Reserve.

Q. 8. A public company may issue secured irredeemable debentures. Comment. [Dec. 2018 (5 Marks)]

Ans.

Perpetual/irredeemable Debentures: If the debentures are issued subject to redemption on the happening of specified events which may not happen for an indefinite period, e.g. winding-up, they are called perpetual/irredeemable debentures.

As per Rule 18(1)(a) of the Companies (Share Capital & Debentures) Rules, 2014, an issue of secured debentures may be made, provided the date of its redemption shall not exceed 10 years from the date of issue.

However, following classes of companies may issue secured debentures for a period exceeding 10 years but not exceeding 30 years:

- (i) Companies engaged in setting up of infrastructure projects.
- (ii) Infrastructure Finance Companies.
- (iii) Infrastructure Debt Fund Non-Banking Financial companies.
- (iv) Companies permitted by a Ministry or Department of the Central Government or by RBI or by the NHB or by any other statutory authority to issue debentures for a period exceeding 10 years.

Thus, after the commencement of the Companies Act, 2013, no company either public or private can issue perpetual or irredeemable debentures.

PROBLEMS & SOLUTIONS

ISSUE OF DEBENTURES

Problem No. 1] Roshan Limited issued 12% debentures of the face value of ₹2,00,000 at 10% discount on 1st January, 2020. Debenture interest after deducting tax at source @ 10% was payable on 30th June and 31st December every year.

All the debentures were to be redeemed after the expiry of 5 years period at 5% premium.

Pass the necessary journal entries.

[June 2012 (6 Marks)]

Ans.

In the books of Roshan Limited
Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
1.1.2020	Bank A/c (2,00,000 × 90%)	Dr. 1,80,000	
	Discount on Issue of Debenture A/c (2,00,000 × 10%)	Dr. 20,000	
	Loss on Issue on Debenture A/c	Dr. 10,000	
	To 12% Debenture A/c		2,00,000
	To Premium on Redemption of Debenture A/c		10,000
	(Being, issued 12% debentures of the face value of ₹2,00,000 at 10% discount redeemable at 5% premium)		

Date	Particulars	Dr. (₹)	Cr. (₹)
30.6.2020	Debenture Interest A/c To Bank A/c To Tax Deducted at Sources A/c (Being, debenture interest paid after deduction of TDS)	Dr. 12,000	10,800 1,200
30.6.2020	Tax Deducted at Sources A/c To Bank A/c (Being, TDS paid to government.)	Dr. 1,200	1,200
31.12.2020	Debenture Interest A/c To Bank A/c To Tax Deducted at Sources A/c (Being, debenture interest paid after deduction of TDS)	Dr. 12,000	10,800 1,200
31.12.2020	Tax Deducted at Sources A/c To Bank A/c (Being, TDS paid to government.)	Dr. 1,200	1,200
31.12.2020	Profit & Loss A/c To Loss on Issue on Debenture A/c To Discount on Issue of Debenture A/c (Being, proportionate loss & discount on issue of debenture written off)	Dr. 6,000	2,000 4,000
31.12.2020	Profit & Loss A/c To Debenture Interest A/c (Being, transfer of interest to profit & loss account)	Dr. 24,000	24,000
31.12.2014	Debenture A/c Premium on Redemption of Debenture A/c To Debenture Holder A/c (Being, amount due on redemption of debentures)	Dr. 2,00,000 10,000	2,10,000
31.12.2014	Debenture Holder A/c To Bank A/c (Being, amount due on redemption of debentures paid)	Dr. 2,10,000	2,10,000

Note: Entry No. 2 to 6 will be repeated for the next 4 years and then last two entries will be passed.

Problem No. 2] Fortune Ltd. issued ₹70,000, 12% debentures of ₹100 each at a premium of 5% redeemable at 110%.

You are required to:

- Show by means of journal entries how you would record the above issue.
- Also show how they would appear in the balance sheet. [Dec. 2012 (6 Marks)]

Ans.

In the books of Fortune Ltd.
Journal Entries

Date	Particulars		Dr. (₹)	Cr. (₹)
	Bank A/c (2,00,000 × 90%)	Dr.	73,500	
	Loss on Issue on Debenture A/c	Dr.	7,000	
	To 12% Debentures A/c			70,000
	To Securities Premium A/c			3,500
	To Premium on Redemption of Debentures A/c			7,000
	(Being, issued 12% debentures of the face value of ₹100 each at 5% premium redeemable at 10% premium)			

EQUITIES & LIABILITIES			₹
Shareholder's Funds:			
	Securities Premium		3,500
	<i>Less: Loss on Issue on Debentures</i>	(7,000)	(3,500)
Non-Current Liabilities:			
	12% Debentures		70,000
	Premium on Redemption of Debentures		7,000
			73,500
ASSETS			₹
Current Assets:			
	Bank Balance		73,500
			73,500

Problem No. 3] S Ltd. issued 10,000, 12% debentures of ₹100 each at a discount of 5%. These debentures are redeemable at a premium of 10% after 5 years.

You are required to show —

- (i) Journal entry on issue of the debentures and
- (ii) The loss on issue of debenture account over the period. [Dec. 2014 (3 Marks)]

Ans.

In the books of S Ltd.
Journal Entries

Date	Particulars		Dr. (₹)	Cr. (₹)
	Bank A/c (10,000 × 95)	Dr.	9,50,000	
	Discount on Issue of Debentures A/c (10,000 × 5)	Dr.	50,000	
	Loss on Issue of Debentures A/c (10,000 × 10)	Dr.	1,00,000	
	To 12% Debentures A/c (10,000 × 100)			10,00,000
	To Premium on Redemption of Debentures A/c (10,000 × 10)			1,00,000
	(Being, 10,000, 12% Debentures of ₹100 issued at 5% discount which are redeemable at 10% premium.)			

Loss on Issue of Debenture A/c

Dr.			Cr.		
Year 1	To Premium on Redemption of Debentures A/c	1,00,000	Year 1	By Profit & Loss A/c	20,000
				By Balance c/d	80,000
		1,00,000			1,00,000
Year 2	To Balance b/d	80,000	Year 2	By Profit & Loss A/c	20,000
				By Balance c/d	60,000
		80,000			80,000
Year 3	To Balance b/d	60,000	Year 3	By Profit & Loss A/c	20,000
				By Balance c/d	40,000
		60,000			60,000
Year 4	To Balance b/d	40,000	Year 4	By Profit & Loss A/c	20,000
				By Balance c/d	20,000
		40,000			40,000
Year 5	To Balance b/d	20,000	Year 5	By Profit & Loss A/c	20,000
					20,000
		20,000			20,000

Problem No. 4] Cheer Ltd. is interested in issuing 10,000, 12% debentures of ₹ 100 each. You are required to pass necessary journal entries in each of the following situations:

- Issued at 10% discount and redeemable at par.
- Issued at 5% premium and redeemable at par.
- Issued at par and redeemable at premium of 5%.
- Issued at discount of 5% and redeemable at premium of 10%.
- Issued at premium of 10% and redeemable at premium of 20%.

[Dec. 2015 (5 Marks)]

Ans.

In the books of Cheer Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
(a)	Bank A/c (10,000 × 90)	Dr. 9,00,000	
	Discount on Issue of Debenture A/c (10,000 × 10)	Dr. 1,00,000	
	To 12% Debentures A/c (10,000 × 100)		10,00,000
	(Being, 10,000 debentures issued at 10% discount which are redeemable at par)		
(b)	Bank A/c (10,000 × 105)	Dr. 10,50,000	
	To 12% Debentures A/c (10,000 × 100)		10,00,000
	To Securities Premium A/c (10,000 × 5)		50,000
	(Being, 10,000 debentures issued at 5% premium which are redeemable at par)		

Date	Particulars	Dr. (₹)	Cr. (₹)
(c)	Bank A/c (10,000 × 100) Dr.	10,00,000	
	Loss on Issue of Debenture A/c (10,000 × 5) Dr.	50,000	
	To 12% Debentures A/c (10,000 × 100)		10,00,000
	To Premium on Redemption of Debentures A/c (10,000 × 5)		50,000
	(Being, 10,000 debentures issued at par which are redeemable 5% premium)		
(d)	Bank A/c (10,000 × 95) Dr.	9,50,000	
	Discount on Issue of Debenture A/c (10,000 × 5) Dr.	50,000	
	Loss on Issue of Debenture A/c (10,000 × 10) Dr.	1,00,000	
	To 12% Debentures A/c (10,000 × 100)		10,00,000
	To Premium on Redemption of Debentures A/c (10,000 × 10)		1,00,000
	(Being, 10,000 debentures issued at 5% discount which are redeemable 10% premium)		
(e)	Bank A/c (10,000 × 110) Dr.	11,00,000	
	Loss on Issue of Debenture A/c (10,000 × 20) Dr.	2,00,000	
	To 12% Debentures A/c (10,000 × 100)		10,00,000
	To Securities Premium A/c (10,000 × 10)		1,00,000
	To Premium on Redemption of Debentures A/c (10,000 × 20)		2,00,000
	(Being, 10,000 debentures issued at 10% premium which are redeemable 20% premium)		

Problem No. 5] X Ltd. made an issue of 10,000 12% debentures of ₹100 each as follows:

₹25 on Application

₹25 on Allotment

₹50 on First & Final Call

Applications were received for 12,000 shares and the directors allotted 10,000 debentures rejecting an application for 2,000 debentures. The money received on application for 2,000 debentures rejected was duly refunded. All the calls were made and duly received. Show the necessary Journal Entries and Cash Book to record the above transactions. [Dec. 2017 (3 Marks)]

Ans.

In the books of X Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c (12,000 × 25) Dr.	3,00,000	
	To 12% Debenture Application A/c		3,00,000
	(Being, application money received @ ₹25 for 12,000 debentures)		

Date	Particulars	Dr. (₹)	Cr. (₹)
	12% Debenture Application A/c To 12% Debenture A/c (10,000 × 25) Dr. To Bank A/c (2,000 × 25)	3,00,000	2,50,000 50,000
	(Being, application money of 10,000 debentures @ ₹ 25 transferred to 12% Debenture Account and application money of 2,000 debentures refunded to applicants as per Boards Resolution No... dated)		
	12% Debenture Allotment A/c To 12% Debenture A/c Dr.	2,50,000	2,50,000
	(Being, allotment money due on 10,000 debentures @ ₹ 25 as per Boards Resolution No... dated)		
	Bank A/c (10,000 × 25) Dr. To 12% Debenture Allotment A/c	2,50,000	2,50,000
	(Being, allotment money on 12% Debenture received)		
	12% Debenture First & Final Call A/c Dr. To 12% Debenture A/c	5,00,000	5,00,000
	(Being, first & final call money due on 10,000 debentures @ ₹ 50 as per Boards Resolution No. dated)		
	Bank A/c (10,000 × 50) Dr. To 12% Debenture First & Final Call A/c	5,00,000	5,00,000
	(Being, first & final call money on 12% Debenture received)		

Dr.		Cash Book (Bank Column only)		Cr.	
To 12% Debenture Application A/c	3,00,000	12% Debenture Application A/c		50,000	
To 12% Debenture Allotment A/c	2,50,000				
To 12% Debenture First & Final Call A/c	5,00,000	By Balance c/d		10,00,000	
	10,50,000			10,50,000	

Problem No. 6] Aman Ltd. issued to the public 16,000, 10% Debentures of ₹100 each at a discount of 2%. The amount payable by applicants is as ₹50 per debenture along with application and balance amount at the time of allotment. The issue was fully underwritten by Gama Ltd. for commission at the rate of 1% of nominal value of the debentures underwritten. The whole of the issue was subscribed by the members of the public at large. The company paid underwriting commission in the form of 10% Debentures of ₹100 each.

Pass the necessary journal entries in the books of Aman Ltd. for the above mentioned transactions. [June 2019 (5 Marks)]

Ans.

In the books of Aman Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c (16,000 × 50) To Debenture Application A/c (Being, receipt of application money on 16,000 10% Debentures of ₹50 per debenture)	Dr. 8,00,000	8,00,000
	10% Debenture Application A/c To 10% Debentures A/c (Being, application money transferred to 10% debentures account)	Dr. 8,00,000	8,00,000
	Debenture Allotment A/c (16,000 × 48) Discount on Issue of Debentures A/c (16,000 × 2) To 10% Debentures A/c (Being, allotment money due on 16,000 debentures @ ₹48 per debenture at a discount of ₹2 per debenture)	Dr. 7,68,000 Dr. 32,000	8,00,000
	Bank A/c To Debenture Allotment A/c (Being, allotment money received)	Dr. 7,68,000	7,68,000
	Underwriting Commission A/c (16,000 × 100 × 1%) To 10% Debentures A/c (Being, underwriting commission paid to Gama Ltd. by issue of 10% debentures)	Dr. 16,000	16,000

DISCOUNT ON ISSUE OF DEBENTURES

Problem No. 7] Moon Ltd. issued 5,000 debentures of ₹100 each at a discount of 10%. The expenses on issue amounted to ₹20,000. The company wants to redeem the debentures at the rate of ₹1,00,000 each year commencing with the end of 5th year.

How much discount and expenses should be written off in each year?

[June 2016 (5 Marks)]

Ans.

Discount on issue of debentures = $5,000 \times 100 \times 10\% = 50,000$.

Expenses on issue of debentures = ₹20,000.

Total amount of discount and expenses is ₹70,000. It should be written off each year according to the ratios of the amounts outstanding.

Year end	Debentures outstanding	Ratio	Discount written-off
1	5,00,000	5	10,000
2	5,00,000	5	10,000
3	5,00,000	5	10,000
4	5,00,000	5	10,000
5	5,00,000	5	10,000

Year end	Debentures outstanding	Ratio	Discount written-off
0	4,00,000	4	
7	3,00,000	3	8,000
8	2,00,000	2	6,000
9	1,00,000	1	4,000
		35	2,000
			70,000

Problem No. 8] Josh Ltd. issued 2,000, 10% debentures of ₹ 100 each at a discount of 10%. These debentures are redeemable at a premium of 10% after 8 years. You are required to —

(i) Show journal entries on issue of debentures.

(ii) Compute the loss on issue of debentures to be accounted over the period.

[Dec. 2016 (5 Marks)]

Ans.

Total discount = $2,000 \times 10 = 20,000$

Year	Debentures outstanding	Ratio	Discount written off
1	2,00,000	2	2,500
2	2,00,000	2	2,500
3	2,00,000	2	2,500
4	2,00,000	2	2,500
5	2,00,000	2	2,500
6	2,00,000	2	2,500
7	2,00,000	2	2,500
8	2,00,000	2	2,500
		16	20,000

Loss on issue of debentures = $2,000 \times 10 = 20,000$

Year	Debentures outstanding	Ratio	Discount written off
1	2,00,000	2	2,500
2	2,00,000	2	2,500
3	2,00,000	2	2,500
4	2,00,000	2	2,500
5	2,00,000	2	2,500
6	2,00,000	2	2,500
7	2,00,000	2	2,500
8	2,00,000	2	2,500
		16	20,000

In the Books of Josh Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
End of Year 1	Bank A/c (2,000 × 90)	Dr. 1,80,000	
	Discount on Issue of Debentures A/c (2,000 × 10)	Dr. 20,000	
	Loss on Issue of Debentures A/c (2,000 × 10)	Dr. 20,000	

Date	Particulars	Dr. (₹)	Cr. (₹)
	To 12% Debentures A/c (2,000 × 100)		2,00,000
	To Premium on Redemption of Debentures A/c (2,000 × 10)		20,000
	(Being, the issue of 2,000 10% debentures of ₹100 each issued at discount of 10% redeemable at 10% premium as per Board Resolution No..... dated.....)		
End of Year 1	Profit & Loss A/c	2,500	
	To Discount on Issue of Debentures A/c (Being, discount on issue of debenture written off)		2,500
End of Year 1	Profit & Loss A/c	2,500	
	To Loss on Issue of Debentures A/c (Being, loss on issue of debenture written off)		2,500

Note: Entry No. 2 & 3 will be repeated at year end for next 7 more years.

Problem No. 9] On 1st July, 2023 a company issued 50,000, 9% debentures of ₹100 each at a discount of 10%. The debentures were redeemable by five annual drawings of ₹10,00,000 on 31st March each year.

Calculate the amount of discount on debentures to be written off at the end of each year on 31st March. [June 2018 (5 Marks)]

Ans. Total discount = $50,000 \times 10 = 5,00,000$

Calculation of discount to be written off for different years:

Year ending	Period	Debentures outstanding	Equivalent monthly amount	Ratio	Discount to be written off
31.3.2024	1.7.2023 to 31.3.2024	50,00,000	4,50,00,000	45	1,36,364
31.3.2025	1.4.2024 to 31.3.2025	40,00,000	4,80,00,000	48	1,45,455
31.3.2026	1.4.2025 to 31.3.2026	30,00,000	3,60,00,000	36	1,09,091
31.3.2027	1.4.2026 to 31.3.2027	20,00,000	2,40,00,000	24	72,727
31.3.2028	1.4.2027 to 31.3.2028	10,00,000	1,20,00,000	12	36,363
				165	5,00,000

Problem No. 10] In April 2019, a company issues 12% ₹10,00,000 debentures at ₹97 but redeemable at ₹104. Redemption will be carried out by annual drawings of ₹2,50,000 (face value) commencing at the March 2020.

You are required to show:

- (1) The journal entries on issue of debentures; and
- (2) The loss on issue of debentures account over the period. [Dec. 2020 (5 Marks)]

Ans.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c (10,000 × 97)	Dr. 9,70,000	
	Discount on Issue of Debenture A/c (10,000 × 3)	Dr. 30,000	
	Loss on Issue of Debentures A/c (10,000 × 4)	Dr. 40,000	

Date	Particulars	Dr. (₹)	Cr. (₹)
	To 12% Debentures A/c (10,000 × 100)		
	To Premium on Redemption of Debenture A/c (10,000 × 4)		10,00,000
	(Being, the issue of 10,000 12% debentures of ₹100 each issued at discount of 3% redeemable at 4% premium as per Board Resolution No. dated		40,000

Discount to be written-off in various years:

Year	Debenture outstanding	Ratio	Discount written off
31-3-2020	10,00,000	100	
31-3-2021	7,50,000	75	12,000
31-3-2022	5,00,000	50	9,000
31-3-2023	2,50,000	25	6,000
			3,000
		250	30,000

Loss on issue of debentures to be written-off in various years:

Year	Debenture outstanding	Ratio	Loss written off
31-3-2020	10,00,000	100	
31-3-2021	7,50,000	75	16,000
31-3-2022	5,00,000	50	12,000
31-3-2023	2,50,000	25	8,000
			4,000
		250	40,000

Problem No. 11] Anjali Ltd. issued 12,000, 13% debentures of ₹100 each at a discount of 6% on 1st July, 2017. The debentures are repayable in three equal instalments of ₹4,00,000 each on the 30th June every year. Books of account of the company are closed on 31st March every year. You are required to show the Discount on Issue of Debentures Account over the period. [Dec. 2021 (5 Marks)]

Ans.

Total discount = 12,000 × 6 = 72,000

Calculation of debentures outstanding for various years:

Year	Period	Debenture outstanding	Month	Product	
2017 - 2018	1-7-2017 to 31-3-2018	12,00,000	9	1,08,00,000	1,08,00,000
2018 - 2019	1-4-2018 to 30-6-2018	12,00,000	3	36,00,000	1,08,00,000
	1-4-2018 to 31-3-2019	8,00,000	9	72,00,000	
2019 - 2020	1-4-2019 to 30-6-2019	8,00,000	3	24,00,000	60,00,000
	1-4-2019 to 31-3-2020	4,00,000	9	36,00,000	
2020 - 2021	1-4-2020 to 30-6-2020	4,00,000	3	12,00,000	12,00,000

Calculation of discount to be written off for different years:

Year Ending	Ratio	Discount to be written off
31-3-2018	108	27,000
31-3-2019	108	27,000

Year Ending	Ratio	Discount to be written off
31-3-2020	60	15,000
31-3-2021	12	3,000
	288	72,000

Dr.		Discount on Issue of Debentures A/c		Cr.	
1-7-2017	To 13% Debentures A/c	72,000	31-3-2018	By Profit & Loss A/c	27,000
			31-3-2018	By Balance c/d	45,000
		72,000			72,000
1-4-2018	To Balance b/d	45,000	31-3-2019	By Profit & Loss A/c	27,000
			31-3-2019	By Balance c/d	18,000
		45,000			45,000
1-4-2019	To Balance b/d	18,000	31-3-2020	By Profit & Loss A/c	15,000
			31-3-2020	By Balance c/d	3,000
		18,000			18,000
1-4-2020	To Balance b/d	3,000	31-3-2020	By Profit & Loss A/c	3,000
		3,000			3,000

Problem No. 12] S Ltd. issued 5,000, 14% debentures of ₹100 each on 1st April, 2016 at a discount of 5% repayable at a premium of 10% after 5 years out of the profits of the company. On 1st April, 2021, balance in the Debenture Redemption Reserve Account stood at ₹1,70,000. You are required to give journal entries in the books of the company both at the time of issue and redemption of debentures.

[Dec. 2021 (5 Marks)]

Ans.

In the books of S Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
1-4-2016	Bank A/c (5,000 × 95)	Dr. 4,75,000	
	Discount on Issue of Debentures A/c (5,000 × 5)	Dr. 25,000	
	Loss on Issue of Debentures A/c (5,000 × 10)	Dr. 50,000	
	To 14% Debentures A/c (5,000 × 100)		5,00,000
	To Premium on Redemption of Debentures A/c (5,000 × 10)		50,000
	(Being issue of 5,000 debentures of ₹100 each at discount of 5% redeemable at 10% premium as per Board Resolution No. dated		
1-4-2021	14% Debentures A/c	Dr. 5,00,000	
	Premium on Redemption of Debentures A/c	Dr. 50,000	
	To Debenture Holders A/c		5,50,000
	(Being the amount due on redemption of debentures)		
1-4-2021	Debenture Holders A/c	Dr. 5,50,000	
	To Bank A/c		5,50,000
	(Being amount paid to debenture holders)		

Date	Particulars	Dr. (₹)	Cr. (₹)
1-4-2021	Debenture Redemption Reserve A/c		
	Profit & Loss A/c	Dr. 1,70,000	
	To General Reserve A/c	Dr. 3,30,000	
	(Being, the nominal value of debentures redeemed during the year transferred to general reserve account)		5,00,000

DEBENTURE ISSUED AS COLLATERAL SECURITY & OTHER THAN CASH

Problem No. 13] X Ltd. borrowed 25,00,000 from a scheduled bank at an annual interest rate of 12% and deposited 14% debentures of the face value of ₹ 40,00,000 as collateral security. Pass the journal entries regarding the issue of debentures as collateral security and also show the above items in the company's balance sheet. [Dec. 2013 (5 Marks)]

Ans.

In the books of X Ltd.
Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Bank A/c		
	To Bank Loan A/c	Dr. 25,00,000	
	(Being, loan taken from bank)		25,00,000
	Debenture Suspense A/c		
	To 14% Debentures A/c	Dr. 40,00,000	
	(Being, 14% debenture issued as collateral security as per Board Resolution No. dated)		40,00,000

Balance Sheet of X Ltd. (Extract)

As at

EQUITY & LIABILITIES		₹
Non-Current Liabilities		
14% Debentures		40,00,000
Bank Loan		25,00,000
		65,00,000
ASSETS		
Non-Current Assets		
Debenture Suspense A/c		40,00,000
Current Assets		
Bank Balance		25,00,000
		65,00,000

Problem No. 14] Mars Ltd. obtained an overdraft of ₹ 5,00,000 on 31st March, 2022 from a bank by issuing and securing 6,000, 12% debentures of ₹ 100 each as collateral security. Show necessary journal entries and the entry in the balance sheet as on 31st March, 2022. [Dec. 2016 (5 Marks)], [June 2019 (5 Marks)]

Ans.

In the books of Mars Ltd.
Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
31.3.2022	For taking loan:		
	Bank A/c Dr.	5,00,000	
	To Bank Overdraft A/c		5,00,000
	(Being, bank overdraft taken)		
31.3.2022	For issuing debenture as collateral security:		
	Debentures Suspense A/c Dr.	6,00,000	
	To 12% Debentures A/c		6,00,000
	(Being, 6,000, 12% Debentures of ₹100 each issued as collateral security as per contra)		

Balance Sheet of Mars Ltd. (Extract)

As at 31.3.2022

EQUITIES & LIABILITIES		₹
Non-Current Liabilities:		
Bank Loan		5,00,000
(Secured by issue of 600, 12% Debentures of ₹ 100 each as collateral security)		
6,000, 12% Debentures of ₹100 each		6,00,000
(issued as collateral security as per contra)		
ASSETS		₹
Non-Current Assets:		
Debentures Suspense Account		6,00,000
(issued as collateral security as per contra)		
Current Assets:		
Cash at Bank		5,00,000

Problem No. 15] Aarvi Ltd. has availed a loan of ₹150 lakh from Bank of India and issued to the Bank of India as collateral security - 2,50,000 debentures bearing interest rate of 9%, and of the face value of ₹100 each.

From the above information, you are required to:

- Pass the necessary journal entries in the books of Aarvi Ltd.
- Show the presentation of the position in the Aarvi Ltd.'s Balance Sheet, as per Schedule III of the Companies Act, 2013. [June 2019 (3 Marks)]

Ans.

Journal Entries

(₹ in lakh)

Date	Particulars	Dr.	Cr.
	Bank A/c To Bank Loan A/c (Being, loan taken from Bank of India)	Dr. 150	150
	Debenture Suspense A/c To 9% Debentures A/c (Being, 9% debentures issued as collateral security as per Board Resolution No. dated))	Dr. 250	250

Balance Sheet (Extract)

EQUITY & LIABILITIES		₹ in lakh
Non-Current Liabilities		
9% Debentures		250
Bank Loan		150
		400
ASSETS		₹ in lakh
Non-Current Assets		
Debenture Suspense A/c		250
Current Assets		
Bank Balance		150
		400

CONVERSION OF DEBENTURES INTO SHARES

Problem No. 16] On 10th April, 2022, Zenith Ltd. issued 12,500, 12% debentures of ₹100 each at ₹98. Holders of these debentures have an option to convert their holdings into 14% preference shares of ₹100 each at a premium of ₹25 per share at any time within three years. On 31st March, 2023, holders of 2,500 debentures notified their intention to exercise the option.

Show the journal entries relating to the issue and conversion of debentures in the books of the company. [Dec. 2013 (5 Marks)]

Ans.

In the books of Zenith Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
1.4.2022	Bank A/c (12,500 × 98)	Dr. 12,25,000	
	Discount on Issue of Debentures A/c (12,500 × 2)	Dr. 25,000	
	To 12% Debenture A/c		12,50,000
31.3.2023	12% Debenture A/c (2,500 × 100)	Dr. 2,50,000	
	To Discount on Issue of Debentures A/c		5,000
	To 14% Preference Share Capital A/c (1,960 × 100)		1,96,000
	To Securities Premium A/c (1,960 × 25)		49,000

Note 1] Preference shares to be issued:

Face value of debentures to be converted (2,500 × 100)	2,50,000
(-) Discount allowed @ 2% on issue (2,500 × 2)	(5,000)
Actual amount received on issue of the debentures	2,45,000
Face value of preference share	100
(-) Premium @ 25%	25
Issue price of preference share	125

$$\text{No. of preference shares to be issued} = \frac{2,45,000}{125} = 1,960$$

Problem No. 17] On 1st November, 2013 S Ltd. issued 10,000, 8% Debentures of ₹100 each.

These debentures were redeemable at 20% premium on 31st October, 2018 by the way of either converting into 8% Preference Shares of ₹100 each at 30% premium or to be paid in cash. Up to 31st October, 2018 the holders of 7,265 debentures had exercised their option for 8% Preference Shares and remaining were paid in cash.

You are required to:

- Find out the nominal value of preference shares issued to debenture holders.
- Give necessary journal entries.

[Dec. 2018 (5 Marks)]

Ans.

In the books of S Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	8% Debentures A/c (10,000 × 100)	Dr. 10,00,000	
	Premium on Redemption of Debentures A/c (10,000 × 20)	Dr. 2,00,000	
	To Debenture Holders A/c		12,00,000
	(Being, the amount due on redemption of debenture at 120%)		
	Debenture Holders A/c (7,260 × 130)	Dr. 9,43,800	
	To 8% Preference Share Capital A/c (7,260 × 100)		7,26,000
	To Securities Premium A/c (7,260 × 30)		2,17,800
	(Being, issue of 7,260 preference shares of ₹100 each at a premium of ₹30 on conversion of 8% debentures)		
	Debenture Holders A/c	Dr. 2,56,200	
	To Bank A/c		2,56,200
	(Being, redemption of 2,135 debentures @ ₹120 in cash)		
	Securities Premium A/c	Dr. 2,00,000	
	To Premium on Redemption of Debentures A/c		2,00,000
	(Being, premium on redemption of preference shares written off against securities premium)		

Note: Calculation of number of preference shares to be issued on conversion of 8% Debentures:

Face value of debentures ($7,865 \times 10$)	7,86,500
+ Premium on redemption ($7,86,500 \times 20\%$)	1,57,300
Total amount payable to debenture holders	9,43,800
Issue price of 8% Preference Shares = $100 + 30 = 130$	
$\frac{9,43,800}{130} = 7,260$ Preference shares	

PURCHASE OF DEBENTURES FOR IMMEDIATE CANCELLATION

Problem No. 18] A company purchased 200, 12% debentures of ₹ 100 each at ₹ 97 on cum interest basis on 1st July, 2024 for immediate cancellation. Interest is payable on 30th September and 31st March each year.

Pass journal entries in the books of the company. [June 2016 (3 Marks)]

Ans.

Date	Particulars	Dr. (₹)	Cr. (₹)
1.7.2024	Debenture Redemption A/c	Dr. 18,800	
	Debenture Interest A/c	Dr. 600	
	To Bank A/c		19,400
	(Being, the purchase of 200, 12% Debentures @ ₹ 97 each cum interest for immediate cancellation)		
1.7.2024	12% Debentures A/c	Dr. 20,000	
	To Debenture Redemption A/c		18,800
	To Profit on Cancellation of Debentures A/c		1,200
	(Being, the cancellation of 200, 12% Debenture and profit on cancellation transferred to profit on cancellation account)		

Note 1:

Cum interest price paid (200×97)	19,400
(+) Interest $\left[200 \times 100 \times 12\% \times \frac{3}{12} \right]$	(600)
Ex-interest price	18,800

Problem No. 19] ABC Ltd. had ₹ 10,00,000, 6% Debentures of ₹ 100 each on 31st March, 2023.

The company purchased in the open market following debentures for immediate cancellation:

On 01-07-2023 — 1,000 Debentures @ ₹ 97/(cum-interest)

On 29-02-2024 — 1,800 Debentures @ ₹ 99/(ex-Interest)

Debenture interest due dates are 30th September and 31st March i.e. twice in a year.

Provide journal entries in the books of the company for the year ended 31st March, 2024. [June 2017 (5 Marks)]

Ans.

In the books of ABC Ltd.
Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
1.7.2023	Debenture Redemption A/c Debenture Interest A/c To Bank A/c (Being, purchase of 1,000, 6% Debenture @ ₹97 each cum-interest for immediate cancellation)	Dr. 95,500 Dr. 1,500	97,000
1.7.2023	6% Debentures A/c To Debenture Redemption A/c To Profit on Cancellation of Debentures A/c (Being, the cancellation of 1,000 6% Debenture and profit on cancellation transferred to profit on cancellation account)	Dr. 1,00,000	95,500 4,500
30.9.2023	Debenture Interest A/c (9,000 × 100 × 6% × 6/12) To Bank A/c (Being, the interest paid on 9,000 debentures @ 6% for 6 month ending 30th September)	Dr. 27,000	27,000
29.2.2024	Debenture Redemption A/c Debenture Interest A/c To Bank A/c (Being, purchase of 1,800, 6% Debentures @ ₹99 each ex-interest for immediate cancellation)	Dr. 1,78,200 Dr. 4,500	1,82,700
29.2.2024	6% Debentures A/c To Debenture Redemption A/c To Profit on Cancellation of Debentures A/c (Being, the cancellation of 1,800 6% Debentures and profit on cancellation transferred to profit on cancellation account)	Dr. 1,80,000	1,78,200 1,800
31.3.2024	Debenture Interest A/c (7,200 × 100 × 6% × 6/12) To Bank A/c (Being, the interest paid on 7,200 debentures @ 6% for 6 month ending 31st March)	Dr. 21,600	21,600
31.3.2024	Profit & Loss A/c To Debenture Interest A/c (Being, the interest on debentures for the year transferred to profit & loss account)	Dr. 54,600	54,600
31.3.2024	Profit & Loss A/c To General Reserve A/c (Being, the nominal value of debentures redeemed during the year transferred to general reserve account)	Dr. 2,80,000	2,80,000
31.3.2024	Profit on Cancellation of Debentures A/c To Capital Reserve A/c (Being, profit on cancellation of debentures transferred to capital reserve account)	Dr. 6,300	6,300

Note 1:		
Cum interest price (1,000 × 97)		97,000
(-) Interest $\left[1,00,000 \times 6\% \times \frac{3}{12} \right]$		(1,500)
Ex-interest price		95,500

Note 2:		
Ex-interest price (1,800 × 99)		1,78,200
(-) Interest $\left[1,80,000 \times 6\% \times \frac{5}{12} \right]$		4,500
Cum interest price		1,82,700

Problem No. 20] On 1st April, 2020 Kapil Ltd. had made an issue of 2,000, 6% debentures of ₹ 100 each. The Company during the year 2021-2022 purchased for cancellation 500 of these debentures. The company paid ₹ 95 per debenture for 400 debentures and ₹ 98 per debenture for the rest. The expenses on purchase amounted to ₹ 200.

Pass journal entries in the books of the company.

[June 2017 (3 Marks)]

Ans.

In the books of Kapil Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
	Debenture Redemption A/c (400 × 95) To Bank A/c (Being, 400 6% Debentures purchased for immediate cancellation)	Dr. 38,000	38,000
	Debenture Redemption A/c (100 × 98) To Bank A/c (Being, 100 6% Debentures purchased for immediate cancellation)	Dr. 9,800	9,800
	6% Debentures A/c To Debenture Redemption A/c To Profit on Cancellation of Debentures A/c (Being, the cancellation of 500 6% Debenture and profit on cancellation transferred to profit on cancellation account)	Dr. 50,000	47,800 2,200
	Expenses A/c To Bank A/c (Being, expense incurred for purchase and cancellation of debentures)	Dr. 200	200
	Profit on Cancellation of Debentures A/c To Expenses A/c (Being, expense incurred for purchase and cancellation of debentures set-off against profit on cancellation of debentures)	Dr. 200	200

Date	Particulars	Dr. (₹)	Cr. (₹)
	Profit on Cancellation of Debentures A/c	Dr. 2,000	
	To Capital Reserve A/c		2,000
	(Being, balance of profit on cancellation of debentures account transferred to capital reserve account)		

Problem No. 21] Fortune Ltd. had 4000, 12% Debentures of ₹100 each as on 1st April, 2018. As per terms of the issue, the company purchased the following debenture in the open market for immediate cancellation:

1st May, 2018	800 Debentures at cum-interest	₹98 each
1st January, 2019	1,600 Debentures at cum-interest	₹100.25 each
1st March, 2019	400 Debentures at ex-interest	₹98.50 each

The company closes its books on 31st March each year. Assuming that debenture interest was payable half-yearly on 30th September and 31st March, show the following accounts in the books of company:

(i) 12% Debentures A/c

(ii) Debenture Interest A/c

(iii) Profit on Redemption of Debenture A/c

[June 2019 (5 Marks)]

Ans.

Dr.		Debenture Redemption A/c		Cr.
1-5-2018	To Bank A/c [Note 1]	77,600	1-5-2018	By 12% Debentures A/c
1-1-2019	To Bank A/c [Note 2]	1,55,600	1-1-2019	By 12% Debentures A/c
1-3-2019	To Bank A/c [Note 3]	39,400	1-3-2019	By 12% Debentures A/c
		2,72,600		
				2,72,600

Dr.		Debenture Interest A/c		Cr.
1-5-2018	To Bank A/c [Note 1]	800	31-3-2019	By Profit & Loss A/c
30-9-2018	To Bank A/c [Note 4]	19,200		
1-1-2019	To Bank A/c [Note 2]	4,800		
1-3-2019	To Bank A/c [Note 3]	2,000		
31-3-2019	To Bank A/c [Note 5]	7,200		
		34,000		
				34,000

Dr.		12% Debentures A/c		Cr.
1-5-2018	To Debenture Redemption A/c	77,600	1-4-2018	By Balance c/d
1-5-2018	To Profit on Cancellation of Debentures A/c	2,400		Redemption A/c
1-1-2019	To Debenture Redemption A/c	1,55,600		
1-1-2019	To Profit on Cancellation of Debentures A/c	4,400		
1-3-2019	To Debenture Redemption A/c	39,400		
				4,00,000

1-3-2019	To Profit on Cancellation of Debentures A/c To Balance c/d	600			
		1,20,000			
		4,00,000			4,00,000

Dr. Profit on Cancellation of Debentures A/c Cr.

31-3-2019	To Capital Reserve A/c [Bal. Fig.]	7,400	1-5-2018	By 12% Debentures A/c	2,400
			1-1-2019	By 12% Debentures A/c	4,400
		7,400	1-3-2019	By 12% Debentures A/c	600
					7,400

Note 1:

Cum interest price (800×98)	78,400
(-) Interest $\left[80,000 \times 12\% \times \frac{1}{12} \right]$	(800)
Ex-interest price	77,600

Note 2:

Cum interest price ($1,600 \times 100.25$)	1,60,400
(-) Interest $\left[1,60,000 \times 12\% \times \frac{3}{12} \right]$	(4,800)
Ex-interest price	1,55,600

Note 3:

Ex-interest price (400×98.5)	39,400
(+) Interest $\left[40,000 \times 12\% \times \frac{5}{12} \right]$	2,000
Cum interest price	41,400

Note 4:

Debenture interest payable on 30th September, 2018:

$$(4,000 - 800) \times 100 \times 12\% \times 6/12 = 19,200$$

Note 5:

Debenture interest payable on 30th September, 2018:

$$(4,000 - 800 - 1,600 - 400) \times 100 \times 12\% \times 6/12 = 7,200$$

PURCHASE OF DEBENTURES AS INVESTMENT

Problem No. 22] Pura Ltd. has issued 15,000, 10% Debentures of ₹100 each on 1st April, 2014.

During the year 2018-19 the following transactions were executed in respect of the debentures:

- On 1st July, 2018, 3,500 own debentures were purchased at ₹95 (ex-interest) from open market and cancelled them.
- On 31st October, 2018, 2,400 own debentures were purchased at ₹97 (cum-interest) from open market. Out of which 1,000 own debentures were sold on 31st December, 2018 at ₹104 (cum-interest).
- Interest on debentures was payable half yearly on 30th September and 31st March every year.

You are required to pass the necessary journal entries for the year ended 31st March, 2019. Ignore Tax Deducted at Source (TDS) on interest on debentures.

[Dec. 2019 (5 Marks)]

Ans.

In the books of Puva Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
1-07-2018	Investment in Own Debentures A/c [Note 1] Debenture Interest A/c To Bank A/c (Being, purchase of 3,500, 10% Debentures @ ₹95 each ex-interest)	Dr. 3,32,500 Dr. 8,750	3,41,250
1-07-2018	10% Debenture A/c To Investment in Own Debentures A/c To Profit on Cancellation of Debenture A/c (Being, the cancellation of 3,500 Own Debentures and profit on cancellation transferred to profit on cancellation debentures account)		3,50,000 3,32,500 17,500
30-09-2018	Debenture Interest A/c (11,500 × 100 × 10% × 6/12) To Bank A/c (Being, debenture interest paid on 11,500 debentures @ 10% for 6 months ending 30th September)	Dr. 57,500	57,500
31-10-2018	Investment in Own Debentures A/c [Note 2] Debenture Interest A/c To Bank A/c (Being, purchase of 2,400, 10% Debentures @ ₹97 each cum-interest)	Dr. 2,30,800 Dr. 2,000	2,32,800
31-12-2018	Bank A/c [Note 3] To Debenture Interest A/c To Investment in Own Debentures A/c (Being, sale of 1,000, Own Debentures @ ₹104 each cum-interest)	Dr. 1,04,000	2,500 1,01,500
31-12-2018	Investment in Own Debentures A/c [Note 4] To Profit on Cancellation of Debentures A/c (Being, the cancellation of 1,000 Own Debentures and profit on cancellation transferred to profit on cancellation debentures account)	Dr. 5,333	5,333

Date	Particulars	Dr. (₹)	Cr. (₹)
31-03-2019	Debenture Interest A/c $(10,500 \times 100 \times 10\% \times 6/12)$ Dr. To Bank A/c $(9,100 \times 100 \times 10\% \times 6/12)$ To Interest on Own Debentures A/c $(1,400 \times 100 \times 10\% \times 6/12)$ (Being, the interest on 10,500 debentures paid and interest on 1,400 Own Debentures credited to interest own debentures account)	52,500	45,500 7,000
31-03-2019	Profit on Cancellation of Debentures A/c Dr. To Capital Reserve A/c (Being, profit on cancellation of debentures transferred to capital reserve account)	22,833	22,833
31-03-2019	Profit & Loss A/c Dr. To Debenture Interest A/c (Being, balance in debenture interest transferred to profit and loss account)	1,18,250	1,18,250
31-03-2019	Profit & Loss A/c Dr. To General Reserve A/c (Being, amount equal to face value of debentures cancelled transferred to general reserve account)	1,18,250	1,18,250

Note 1:

Ex-interest price $(3,500 \times 95)$	3,32,500
(+) Interest $\left[3,50,000 \times 10\% \times \frac{3}{12} \right]$	8,750
Cum interest price	3,41,250

Note 2:

Cum interest price $(2,400 \times 97)$	2,32,800
(-) Interest $\left[2,40,000 \times 10\% \times \frac{1}{12} \right]$	(2,000)
Ex-interest price	2,30,800

Note 3:

Cum interest price $(1,000 \times 104)$	1,04,000
(-) Interest $\left[1,00,000 \times 10\% \times \frac{3}{12} \right]$	(2,500)
Ex-interest price	1,01,500

Note 4:

Sale price of Own Debentures	1,01,500
(-) Cost of Own Debentures $[2,30,800 \times 1,000/2,400]$	(96,167)
Profit on Cancellation of Debentures	5,333

Problem No. 23] On 1st July, 2020 a company purchased its own 1,000 9% Debentures of 100 each for ₹88,360. You are required to give necessary journal entries if:

- (i) These 9% debentures are cancelled immediately.
 (ii) These 9% debentures, purchased by the company, are kept as investment.

[Dec. 2021 (3 Marks)]

Ans.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
(i)	Debenture Redemption A/c To Bank A/c (Being, the purchase of 1,000 debentures for immediate cancellation)	Dr. 88,360	88,360
	9% Debentures A/c To Debenture Redemption A/c To Profit on Cancellation of Debentures A/c (Being, the cancellation of 1,000 debentures and profit transferred to profit on cancellation of debentures account)	Dr. 1,00,000	88,360 11,640
(ii)	Investment in Own Debenture A/c To Bank A/c (Being, the purchase of 1,000 own debentures as investment)	Dr. 88,360	88,360

REDEMPTION OF DEBENTURES WHEN THERE IS SINKING FUND

Problem No. 24] Following balances appeared in the books of N Ltd. on 1st April, 2024:

12% Debentures	8,00,000
12% Debenture Sinking Fund	6,00,000
12% Debenture Sinking Fund Investments (10% Govt. Bonds of ₹7,20,000)	6,00,000

Annual contributions of ₹1,28,000 to sinking fund is to be made on 31st March every year.

On 31st March, 2025, balance at bank was ₹4,00,000 after receipt of interest.

The company sold the investments at 80% and debentures were redeemed.

You are required to prepare:

- (i) 12% Debentures A/c
 (ii) Debenture Sinking Fund A/c
 (iii) Debenture Sinking Fund Investments A/c
 (iv) Bank A/c

[Dec. 2005 (4 Marks)], [June 2016 (4 Marks)],

[Dec. 2016 (4 Marks)]

Ans.

In the books of N Ltd.

12% Debenture A/c

Dr.				Cr.	
31.3.2025	To Bank A/c	8,00,000	1.4.2024	By Balance b/d	8,00,000
		8,00,000			8,00,000

Debenture Sinking Fund A/c

Dr.				Cr.	
31.3.2025	To Debenture Sinking Fund Investment A/c	24,000	1.4.2024	By Balance b/d	6,00,000
31.3.2025	To General Reserve A/c (transfer) [Bal. Fig.]	7,76,000	31.3.2025	By P & L Appropriation A/c (Annual contribution)	1,28,000
		8,00,000	31.3.2025	By Interest on Sinking Fund Investment A/c	72,000
					8,00,000

Debenture Sinking Investment Fund A/c

Dr.				Cr.	
1.4.2024	To Balance b/d (Facevalue ₹7,20,000)	6,00,000	31.3.2025	By Bank A/c (7,20,000 × 80%)	5,76,000
			31.3.2025	By Debenture Sinking Fund A/c (Loss on sale)	24,000
		6,00,000			6,00,000

Bank A/c

Dr.				Cr.	
31.3.2025	To Balance b/d (4,00,000 - 72,000)	3,28,000	31.3.2025	By 12% Debenture A/c	8,00,000
31.3.2025	To Interest on Sinking Fund Investment A/c	72,000	31.3.2025	By Balance c/d [Bal. Fig.]	1,76,000
31.3.2025	To Debenture Sinking Fund Investment A/c (7,20,000 × 80%)	5,76,000			
		9,76,000			9,76,000

Problem No. 25] On 31st March, 2024 the following balances stood in the books of a company:

8% First mortgage debentures	10,00,000
Debentures redemption fund	10,65,400
Debentures redemption fund investments:	
- ₹3,50,000, 6% Haryana Electricity Board Bonds	3,56,300
- ₹4,00,000, 5% Punjab Water Board Loan	3,20,340
- ₹3,00,000, 8% Rajasthan Govt. Loan	3,08,550
- ₹80,000, 7% Gurgaon Gramin Bank Loan	80,210

On the same day investments were sold as follows:

- 6% Haryana Electricity Board Bond	at par
- 5% Punjab Water Board Loan at	₹91
- 8% Rajasthan Govt. Loan at	₹109
- 7% Gurgaon Gramin Bank Loan at	₹103

On 31st March, 2024 debentures were redeemed at a premium of 5%. You are required to prepare important accounts in the books of company.

[June 2014 (7 Marks)]

Ans.

Dr.		8% First Mortgage Debentures A/c		Cr.	
31.3.2024	To Bank A/c	10,00,000	31.3.2024	By Balance b/d	10,00,000
		10,00,000			10,00,000

Dr.		Premium on Redemption A/c		Cr.	
31.3.2024	To Bank A/c	50,000	31.3.2024	By Debentures Redemption Fund A/c	50,000
		50,000			50,000

Dr.		Debentures Redemption Fund A/c		Cr.	
31.3.2024	To Premium on Redemption A/c	50,000	31.3.2024	By Balance b/d	10,65,400
31.3.2024	To General Reserve A/c	10,73,400	31.3.2024	By Debentures Redemption Fund Investment A/c	58,000
		11,23,400			11,23,400

Dr.		Debentures Redemption Fund Investment A/c		Cr.	
31.3.2024	To Balance b/d	10,65,400	31.3.2024	By Bank A/c	
	- 6% Haryana Electricity Board Bonds			- 6% Haryana Electricity Board Bonds	3,50,000
	- 5% Punjab Water Board Loan			- 5% Punjab Water Board Loan	3,64,000
	- 8% Rajasthan Govt. Loan			- 8% Rajasthan Govt. Loan	3,27,000
	- 7% Gurgaon Gramin Bank Loan			- 7% Gurgaon Gramin Bank Loan	82,400
31.3.2024	To Debenture Redemption Fund A/c	64,300			
		11,23,400			11,23,400

Problem No. 26] Following balances appeared in the books of Bright Ltd. as on 1st April, 2023:

- Sinking fund account ₹50,000
- Sinking fund investment account ₹48,000 (10% government securities, nominal value ₹45,000)
- 12% Debenture account ₹1,00,000.

The company sold ₹30,000 government securities at 110% and redeemed part of the debentures at a premium of 10% on 1st April, 2023.

Show debenture account, sinking fund account, sinking fund investment account and debenture holders account.

[June 2015 (5 Marks)]

Ans.

In the books of Bright Ltd.

Dr.		12% Debenture A/c		Cr.	
1.4.2023	To Debenture Holder A/c	30,000	1.4.2023	By Balance b/d	1,00,000
1.4.2023	To Balance c/d	70,000			
		<u>1,00,000</u>			<u>1,00,000</u>

Dr.		Sinking Fund A/c		Cr.	
1.4.2023	To Premium on Redemption Debenture A/c (30,000 × 10%)	3,000	1.4.2023	By Balance b/d	50,000
1.4.2023	To General Reserve A/c	30,000	1.4.2023	By Sinking Fund Investment A/c	1,000
1.4.2023	To Balance c/d	18,000			
		<u>51,000</u>			<u>51,000</u>

Dr.		Sinking Fund Investment A/c		Cr.	
1.4.2023	To Balance b/d (Face Value ₹45,000)	48,000	1.4.2023	By Bank (Sale)	33,000
1.4.2023	To Sinking Fund A/c (Profit on sale)	1,000	1.4.2023	By Balance c/d	16,000
		<u>49,000</u>			<u>49,000</u>

Dr.		Debenture Holder A/c		Cr.	
1.4.2024	To Bank A/c	33,000	1.4.2024	By 12% Debenture A/c	30,000
			1.4.2024	By Premium on Redemption Debenture A/c	3,000
		<u>33,000</u>			<u>33,000</u>

Calculation of profit or loss on sale of investment:

Sale price investment (30,000 × 110%)	33,000
(-) Cost of investment $\left[\frac{30,000 \times 48,000}{45,000} \right]$	(32,000)
Profit on sale of investment	1,000

Problem No. 27] On June 30, 2024; following balances stood in the books of SP Ltd.:

7% Second Mortgage Debentures of ₹100 each	4,00,000
Income received on Sinking Fund Investments	14,500
Discount on issue of Debentures	25,000
Sinking Fund	3,65,500
Sinking Fund Investments:	
(a) ₹2,00,000 5% State Development Loans	1,90,000
(b) ₹1,80,000 6% National Defence Bonds	2,00,000

On the same day, the Investments were sold as follows:

- (a) the 5% State Development Loans at 90% and
(b) 6% National Defence Bonds at par.

On July 1, 2024, all the Debentures were redeemed at a premium of 2.5%. Annual contribution for redemption was ₹50,000. Ignore Interest.

Prepare 7% Mortgage Debentures, Sinking Fund & Sinking Fund Investment Accounts. [June 2017 (5 Marks)]

Ans.

Dr.		7% Mortgage Debenture A/c		Cr.	
30.6.2024	To Bank A/c	4,00,000	30.6.2024	By Balance b/d	4,00,000
		4,00,000			4,00,000

Dr.		Premium on Redemption A/c		Cr.	
30.6.2024	To Bank A/c	10,000	30.6.2024	By Sinking Fund A/c	10,000
		10,000			10,000

Dr.		Sinking Fund A/c		Cr.	
30.6.2024	To Sinking Fund Investment A/c	30,000	30.6.2024	By Balance b/d	3,65,500
30.6.2024	To Premium on Redemption A/c	10,000	30.6.2024	By Bank A/c (income)	14,500
30.6.2024	To Discount on Issue of Debenture A/c	25,000	30.6.2024	By Profit & Loss A/c (Annual contribution)	50,000
30.6.2024	To General Reserve A/c	3,65,000			
		4,30,000			4,30,000

Dr.		Sinking Fund Investment A/c		Cr.	
30.6.2024	To Balance b/d		30.6.2024	By Bank A/c	
	- 5% State Development Loan (2,00,000)	1,90,000		- 5% State Development Loan (2,00,000 × 90%)	1,80,000
	- 6% National Defense Bond (1,80,000)	2,00,000		- 6% National Defense Bond	1,80,000
			30.6.2024	By Sinking Fund A/c	30,000
		3,90,000			3,90,000

Problem No. 28] Following balances appeared in the books of R Ltd. on 1.4.2023:

12% Debentures	- ₹8,00,000
Sinking Fund	- ₹7,00,000
Sinking Fund Investment	- ₹7,00,000 (Represented by 10% ₹7,50,000 secured bonds of Government of India)

Annual contribution to the sinking fund was ₹1,20,000 made on 31st March each year. On 31.3.2024, balance at bank was ₹3,50,000 before receipt of interest. The company sold the investments at 90% for redemption of debentures at a premium of 10% on above date.

You are required to prepare the following accounts for the year ended 31.3.2024:

- (i) Sinking Fund Account
 (ii) Sinking Investment Fund Account
 (iii) Bank Account

[June 2018 (5 Marks)]

Ans.

In the books of R Ltd.

12% Debentures A/c

Dr.				Cr.	
31.3.2024	To Bank A/c	8,00,000	1.4.2023	By Balance b/d	8,00,000
		8,00,000			8,00,000

Dr.		Sinking Fund A/c		Cr.	
31.3.2024	To Sinking Fund Investment A/c	25,000	1.4.2023	By Balance b/d	7,00,000
31.3.2024	To Premium on Redemption of Debentures A/c	80,000	31.3.2024	By P & L App. A/c (Annual contribution)	1,20,000
31.3.2024	To General Reserve A/c (Transfer) [Bal. Fig.]	7,90,000	31.3.2024	By Interest on Sinking Fund Investment A/c	75,000
		8,95,000			8,95,000

Dr.		Sinking Investment Fund A/c		Cr.	
1.4.2014	To Balance b/d (Face value 7,50,000)	7,00,000	31.3.2024	By Bank A/c	6,75,000
		7,00,000	31.3.2024	By Sinking Fund A/c (Loss on sale)	25,000
					7,00,000

Dr.		Bank A/c		Cr.	
31.3.2024	To Balance b/d	3,50,000	31.3.2024	By 12% Debentures A/c	8,00,000
31.3.2024	To Interest on Sinking Fund Investment A/c	75,000	31.3.2024	By Premium on Redemption of debentures	80,000
31.3.2024	To Sinking Fund Investment A/c (7,50,000 × 90%)	6,75,000	31.3.2024	By Balance c/d [Bal. Fig.]	2,20,000
		11,00,000			11,00,000

Problem No. 29] The Balance Sheet of Z Ltd. as at 31-3-2018 supplied the following information:

	₹
13% Debenture Account	14,00,000
13% Debenture Redemption Fund Account	10,00,000
13% Debenture Redemption Fund Investment Account	10,00,000
Annual contribution to Debenture Redemption Fund	1,40,000

The debentures were redeemed on 31-3-2019, when investment were sold for ₹14,00,000.

Prepare 13% Debenture Redemption Fund Account and 13% Debenture Fund Investment Account. [Dec. 2019 (3 Marks)]

5.36

PART I: CORPORATE ACCOUNTING

Ans.

Dr.

Debenture Redemption Fund A/c

					Cr.
			1-4-2018	By Balance b/d	10,00,000
			31-3-2019	By P & L App. A/c (Annual Contribution)	1,40,000
			31-3-2019	By Interest on Debenture Redemption Fund Investment A/c (10,00,000 × 13%)	1,30,000
31-3-2019	To General Reserve A/c [Bal. Fig.]	16,70,000	31-3-2019	By Debenture Redemption Investment Fund A/c	4,00,000
		16,70,000			16,70,000

Dr.

Debenture Redemption Investment Fund A/c

					Cr.
1-4-2018	To Balance b/d	10,00,000	31-3-2019	By Bank A/c	14,00,000
31-3-2019	To Debenture Redemption Fund A/c	4,00,000			
		14,00,000			14,00,000

RELATED ASPECTS OF COMPANY ACCOUNTS

UNIT I : SHARES WITH DIFFERENTIAL RIGHTS

Q. 1. Board of directors of Progressive Ltd. decides to issue equity shares of the company with differential voting rights. Examining the provisions of the Companies Act, 2013, state the conditions to be complied with by the company in this regard. [Dec. 2016 (8 Marks)]

Ans. Shares with differential rights: Shares with differential rights means shares issued with differential rights as to dividend, voting or otherwise in accordance with Section 43(a)(ii) of the Companies Act, 2013.

Conditions for issuing shares with differential rights: Rule 4 of the Companies (Share Capital & Debentures) Rules, 2014 provides that no company limited by shares shall issue equity shares with differential rights as to dividend, voting or otherwise, unless it complies with the following conditions:

- (1) **Authorization from AOA:** The article of association authorizes the issue of shares with differential rights.
- (2) **Resolution:** The issue of shares is authorized by an **ordinary resolution** passed at a general meeting of the shareholders.
However, in case of listed company the issue of such shares shall be approved by the shareholders through **postal ballot**.
- (3) **Limit on voting power:** Voting power in respect of shares with differential rights of the company shall not exceed 74% of total voting power including voting power in respect of equity shares with differential rights issued at any point of time.
- (4) **Track record of profits:** The company having consistent track record of distributable profits for the last 3 years.
- (5) **No default in financial statements & annual returns:** The company has not defaulted in filing financial statements and annual returns for 3 financial years immediately preceding the financial year in which it is decided to issue such shares.
- (6) **No subsisting default in certain matters:** The company has no subsisting default in following:
 - (a) Payment of a declared dividend to its equity shareholders.
 - (b) Repayment of its matured deposits.

- (c) Redemption of its preference shares or debentures that have become due for redemption.
 - (d) Payment of interest on deposits or debentures.
 - (e) Payment of preference dividend.
- (7) **No defaults in respect of dividend, term loans etc.:** The company has not defaulted in following:
- (a) Dividend on preference shares.
 - (b) Repayment of any term loan from a public financial institution or State level financial institution or scheduled bank that has become repayable or interest payable thereon.
 - (c) Dues with respect to statutory payments relating to its employees to any authority.
 - (d) In crediting the amount in Investor Education & Protection Fund to the Central Government.

However, a company may issue equity shares with differential rights upon expiry of **5 years** from the end of the financial Year in which such default was made good.

- (8) **No penalty under certain laws:** The company has not been penalized by Court or Tribunal during the last 3 years of any offence under the following laws:
- (a) RBI Act, 1934
 - (b) SEBI Act, 1992
 - (c) Securities Contracts (Regulation) Act, 1956
 - (d) Foreign Exchange Management Act, 1999
 - (e) Any other special Act, under which such companies being regulated by sectoral regulators.

Q. 2. As a Practicing Company Secretary, advise your client company regarding the matter relating to issue of shares with differential rights, to be included in the Board of Directors Report.

[June 2017 (4 Marks)]

Ans. Disclosures in Board's Report: As per Rule 4(4) of the Companies (Share Capital & Debentures) Rules, 2014, in case of issue of shares with differential rights, the board of directors shall disclose in the Board's Report, the following details:

- (i) Number of shares allotted with differential rights.
- (ii) Details of the differential rights relating to voting rights and dividends.
- (iii) Percentage of the shares with differential rights to the total post issue equity share capital with differential rights issued at any point of time and percentage of voting rights which the equity share capital with differential voting right shall carry to the total voting right of the aggregate equity share capital.
- (iv) Price at which such shares have been issued.
- (v) Particulars of promoters, directors or key managerial personnel to whom such shares are issued.

- (vi) Change in control, in the company consequent to the issue of equity shares with differential voting rights.
- (vii) Diluted EPS calculated in accordance with the applicable accounting standards.
- (viii) Pre and post issue shareholding pattern along with voting rights.

UNIT II: BUY-BACK OF SHARES

Q. 3. State the conditions which are required to be satisfied by a company for the purpose of buy-back of shares. [June 2003 (4 Marks)], [Dec. 2010 (8 Marks)]

Or

Enumerate the conditions that must be satisfied in order to buy-back of shares according to section 68(2) of the Companies Act, 2013. [Dec. 2018 (5 Marks)]

Ans. Buy-back [Section 68(1)]: A company may purchase its own shares or other specified securities out of:

- (a) Free reserves or
- (b) Securities premium account or
- (c) Proceeds of the issue of any shares or other specified securities.

However, no buy-back of any kind of shares or other specified securities shall be made out of the proceeds of an earlier issue of the same kind of shares or same kind of other specified securities,

Conditions for buy-back of shares [Section 68(2)]: No company shall purchase its own shares or other specified securities, unless –

- (1) The buy-back is authorized by its articles.
- (2) A special resolution has been passed at a general meeting of the company authorizing the buy-back where buy-back is above 10% but up to 25% of the aggregate of paid-up capital and free reserves of the company.

However, for buy-back up to 10% of paid-up capital and free reserves of the company Board Resolution is sufficient.

In respect of the buy-back of equity shares in any financial year, the reference to 25% shall be construed with respect to its *total paid-up equity capital* in that financial year.

- (3) The ratio of the aggregate of secured and unsecured debts owed by the company after buy-back is not more than twice the paid-up capital and its free reserves. *i.e.* to say –

$$\frac{\text{Secured + Unsecured Debts}}{\text{Paid-up Capital + Free Reserves}} \leq 2$$

The Central Government may, by order, notify a higher ratio of the debt to capital and free reserves for a class or classes of companies.

- (4) All the shares or other specified securities for buy-back are **fully paid-up**.
- (5) The buy-back of the shares or other specified securities listed on any recognized stock exchange is in accordance with the SEBI (Buy-Back of Securities) Regulations, 2018.

- (6) The buy-back in respect of shares or other specified securities for unlisted public company and private companies is in accordance with the Companies (Share Capital & Debentures) Rules, 2014.
- (7) No offer of buy-back shall be made within a period of 1 year reckoned from the date of the closure of the preceding offer of buy-back, if any. *In simple words, there should be gap of 1 year between two buy-back.*

Prohibition of issue of shares of same kind for next 6 months [Section 68(8)]: Where a company completes a buy-back of its shares or other specified securities, it shall not make a further issue of the same kind of shares or other securities including allotment of new shares u/s 62(1)(a) [i.e. right issue] or other specified securities within a period of 6 months.

Exception: However, bonus issue, conversion of warrants, stock option schemes, sweats equity or conversion of preference shares or debentures into equity shares will be allowed.

Prohibition for buy-back in certain circumstances [Section 70]: No company shall directly or indirectly purchase its own shares or other specified securities –

- Through any subsidiary company including its own subsidiary companies;
- Through any investment company or group of investment companies; or
- If a default, is made by the company, in the repayment of deposits, interest payment thereon, redemption of debentures or preference shares or payment of dividend to any shareholder, or repayment of any term loan or interest payable thereon to any financial institution or banking company.

However, the buy-back is not prohibited, if the default is remedied and a period of 3 years has lapsed after such default ceased to subsist.

No company shall, directly or indirectly, purchase its own shares or other specified securities in case such company has not complied with the provisions of following sections –

- Section 92 [Annual Return]
- Section 123 [Declaration of dividend]
- Section 127 [Punishment for failure to distribute dividend]
- Section 129 [Financial Statements]

Q. 4. As a matter of prudence, whole of free reserves should not be utilized in the case of buy-back of shares.
[Dec. 2008 (3 Marks)]

Ans. Buy-back [Section 68(1)]: A company may purchase its own shares or other specified securities out of:

- Free reserves or
- Securities premium account or
- Proceeds of the issue of any shares or other specified securities.

However, as a matter of prudence, whole of free reserves should not be utilized in the case of buy-back of shares and the following adjustments should be made against free reserves to arrive at the net amount available for the purpose of buy-back:

- Unamortized miscellaneous expenditure.
- Unamortized deferred revenue expenditure.

- Purchased goodwill.
- Contingent liabilities likely to mature and not provided.
- Any diminution of long term investments not provided.
- Any impairment in the value of tangible assets not provided.

Q. 5. Buy-back may be misused by the corporate entities at the cost of innocent investors. Give your comments.
[June 2010 (3 Marks)]

Ans. The buy-back may be misused by the corporate entities at the cost of innocent investor because of the following reasons:

- (i) It will provide opportunity for insider trading. The promoters, before the buy-back may understate the earning by manipulating accounting policies in respect of depreciation, valuation of inventories *etc.* This would lead to a fall in the quoted prices of shares and the promoter would buy then at low quotations. In this way, the insiders would earn extra money when the company buy-backs these shares at a highest price.
- (ii) Buy-back lead to artificial manipulation of stock prices.

Q. 6. "Measuring the shareholders' value" is the objective of Good Corporate Governance. Comment on the statement, how buy-back of shares achieves it.
[June 2017 (5 Marks)]

Ans. Good corporate governance calls for maximizing the shareholder value. When a company has surplus funds for which it does not have good avenues for deployment assuring an average return on capital employed and earnings per share, the company's financial structure requires balancing.

Objectives/benefits of buy-back: Various objectives/benefits for buy-back are given below:

1. To improve Earnings Per Share (EPS).
2. To improve return on capital and return on net worth
3. To enhance the long term shareholder value.
4. To enhance consolidation of stake in the company.
5. To prevent unwelcome takeover bids.
6. To return surplus cash to shareholders.
7. To achieve optimum capital structure.
8. To support share price during periods of sluggish market conditions.
9. To service the equity more efficiently.
10. To provide an additional exit route to shareholders when shares are under-valued or are thinly traded.

The decision to buy-back is also influenced by various other factors relating to the company, such as growth opportunities, capital structure, sourcing of funds, cost of capital and optimum allocation of funds generated.

PROBLEMS & SOLUTIONS

Problem No. 1] Hardnut Ltd. wants to buy-back its equity shares. The company has equity share capital of ₹100 Crore (face value of ₹10 fully paid-up) and free reserves of ₹200 Crore. Partly paid equity shares are ₹60 Crore. Preference share capital of face value ₹100 fully paid is ₹40 Crore. The company seeks your opinion about the quantum of shares that can be bought back. [June 2015 (5 Marks)]

Ans.

(i) Calculation of possible amount of buy-back by passing board resolution:

According to the proviso to Section 68(2) of the Companies Act, 2013, the Board can authorize buy-back of securities not exceeding 10% of total paid-up equity capital and free reserves of the company.

$$(100 \text{ Crore} + 60 \text{ Crore} + 200 \text{ Crore}) \times 10\% = 30 \text{ Crore.}$$

Thus, maximum number of equity shares that can be brought back by passing board resolution is 3 Crore equity shares (30 Crore/10).

(ii) Calculation of possible amount of buy-back by passing shareholders resolution:

According to Section 68(2) of the Companies Act, 2013, shareholders by passing special resolution can approve buy-back up to 25% of paid-up capital and free reserves.

In respect of the buy-back of equity shares in any financial year, the reference to 25% shall be construed with respect to its total paid-up equity capital in that financial year.

$$(100 \text{ Crore} + 60 \text{ Crore} + 200 \text{ Crore}) \times 25\% = 90 \text{ Crore.}$$

Further, buy-back of equity shares in any financial year should not exceed 25% of the total paid-up equity capital of the company.

$$(100 \text{ Crore} + 60 \text{ Crore}) \times 25\% = 40 \text{ Crore.}$$

Thus, maximum number of equity shares that can be brought back by passing shareholders resolution is 4 Crore equity shares (40 Crore/10).

Problem No. 2] Premium Ltd. is considering buy-back of its shares without using any proceeds of shares or other specified securities. The balance sheet of Premium Ltd. shows the following status as on 31st March, 2018:

<i>Asset/Liabilities</i>	<i>Amount</i>
Share Capital:	
1,00,000 Equity shares of ₹10 each (fully paid-up)	₹10,00,000
Free reserves	₹5,00,000
Unsecured debt	₹7,00,000
Secured debt	₹15,00,000

Determine the maximum quantum of buy-back of shares with the shareholders approval as on 1st April, 2018.

[Dec. 2018 (5 Marks)]

Ans.

Following conditions of Section 68 of the Companies Act, 2013 required to be observed to calculate maximum limit up to which buy-back can be made by the company:

- (1) The buy-back of equity shares in any financial year should not exceed 25% of its total paid-up equity capital in that financial year. [$₹10,00,000 \times 25\% = ₹2,50,000$]
- (2) 25% of the aggregate of paid-up capital and free reserves of the company. [$(₹10,00,000 + ₹5,00,000) \times 25\% = ₹3,75,000$]
- (3) The ratio of the aggregate of secured and unsecured debts owed by the company after buy-back is not more than **twice** the paid-up capital and its free reserves. Buy-back is out of free reserves and hence a sum equal to the nominal value of the share bought back shall be transferred to Capital Redemption Reserve (CRR). Let the nominal of amount shares to be buy-back be 'x'. (equal amount will be transferred to CRR)

$$\frac{\text{Secured + Unsecured Debts}}{\text{Paid-up Capital + Free Reserves}} \leq 2$$

Let the amount to be buy-back be 'x'.

$$\frac{22,00,000}{10,00,000 - x + (5,00,000 - x)} = 2$$

$$\begin{aligned} 22,00,000 &= 30,00,000 - 4x \\ - 8,00,000 &= - 4x \\ x &= ₹2,00,000 \end{aligned}$$

Since, out of the above three calculation minimum amount is ₹2,00,000; hence maximum face value of shares that can be brought is ₹2,00,000.

No. of shares = $₹2,00,000/10 = 20,000$ equity shares.

Problem No. 3] Udyog Ltd. furnishes the following summarized Balance Sheet as at 31st March, 2018:

	Note No.	(₹ in lakh)
I. EQUITY & LIABILITIES		
(1) Shareholders Funds:		
(a) Share Capital	1	2,400
(b) Reserves & Surplus	2	1,620
(2) Non-Current Liabilities:		
12% Debentures		1,500
(3) Current Liabilities		
Total		<u>7,400</u>
II. ASSETS		
(1) Non-Current Assets:		
Fixed Assets		4,052
(2) Current Assets	4	<u>3,348</u>
Total		<u>7,400</u>

Notes:

Note 1: Share Capital:	
240 lakh fully paid-up Equity Shares ₹10 each	2,400
Note 2: Reserve & Surplus:	
Security Premium	350
General Reserve	530
Capital Redemption Reserve	400
Profit & Loss Account	340
	1,620
Note 3: Current Liabilities:	
Trade Payables	1,490
Other Current Liabilities	390
	1,880
Note 4: Current Assets:	
Current Investments	148
Inventories	1,200
Trade Receivables	520
Cash in Bank	1,480
	3,348

Additional Information:

- (i) On 1st April, 2018, the company announced buy-back of 25% of its equity shares @ ₹ 15 per share. For this purpose it sold all its current investments for ₹ 150 lakh.
- (ii) On 10th April, 2018, the company achieved the target of buy-back.
- (iii) On 30th April, 2018, the company issued one fully paid-up equity shares of ₹10 each by way of bonus for every four equity shares held by capitalization of reserves.

You are required to prepare Balance Sheet after bonus issue as per Schedule III of Companies Act, 2013.

[Dec. 2018 (5 Marks)]

Ans.

Udyog Ltd.

As on 31st March, 2018

EQUITY & LIABILITIES	(₹ in lakh)
Shareholders Funds	
Share Capital (2,400 - 600 + 450)	2,250
Reserve & Surplus	
Security Premium	50
Profit & Loss Account	272

Capital Redemption Reserve	550
Non-Current Liabilities	
12% Debentures	
Current Liabilities	1,500
Trade Payables	
Other Current Liabilities	1,490
Total	390
ASSETS	6,502
Non-Current Assets	(₹ in lakh)
Fixed Assets	4,052
Current Assets	
Inventories	1,200
Trade Receivables	520
Cash & Bank (1,480 + 150 - 600 - 300)	730
Total	6,502

Note 1:

Free Reserves			Capital Profits		
	GR	P&L		SP	CRR
Balance	530	340	Balance	350	400
Profit on sale of investment		2	(-) Premium on redemption (300)	50	
		342			
(-) Buy-back of equity capital (530)	(530)	(70)	Transfer from GR, P&L		600
	Nil	272	(-) Bonus issue		(450)
					550

Equity capital to be brought back	600	Premium on redemption	300
(-) Out of General Reserve	(530)	(-) Out of securities premium	(300)
	70		Nil
(-) Out of P&L	(70)		
	Nil		

Note 2: Calculation of bonus shares to be issued:

$$2,400 - 600 \times \frac{1}{4} = ₹ 450 \text{ lakh}$$

Problem No. 4] Financial data of a listed company as on 31st March, 2018 are as follows:

Authorized equity share capital (₹10 each)	₹ 10 Crore
Paid-up equity share capital	₹ 5 Crore
General reserve	₹ 3 Crore
Debenture redemption reserve	₹ 2 Crore

Board of directors of your company passed resolution by circulation for buy-back of shares to the extent of 9% of the company's paid-up share capital and free reserves. You are required to examine the validity of the proposal with reference to the provisions of the SEBI Regulations. [June 2019 (4 Marks)]

Ans.

As per Section 68(2) of the Companies Act, 2013 read with SEBI Regulations, the board of directors is authorized to buy-back up to 10% of the total paid-up equity capital and free reserves of the company by passing resolution at its meeting.

Under Section 179(3)(b), the Board of Directors of a company has given power to buy-back of securities as per Section 68 by passing resolution at meetings of the Board.

Therefore, in the present case, the Board of Directors are authorized to buy-back the shares of the company up to 10% of the paid-up capital and free reserves, provided the resolution authorizing the buy-back is passed at the Board meeting and **not by circular resolution**.

As per the facts given in case, the board of directors of Pious Ltd. desires to buy-back 9% of paid-up capital and free reserve. This can be done by passing Board Resolution at board meeting.

Total shares that can be brought back by passing Board Resolution are calculated as follows:

$$[\text{₹5 Crore (Paid-up Capital)} + \text{₹3 Crore (General Reserve)}] \times 9\% = \text{₹0.72 Crore}$$

$$\text{No of shares} = 0.72 \div 10 = 0.072 \text{ Crore shares i.e. } 7,20,000 \text{ shares}$$

The company should also comply with the other conditions specified in Section 68 and the SEBI (Buy-back of Securities) Regulations, 2018.

Problem No. 5] An extract of Balance Sheet of Airrath Aviation Ltd., comprises of

Equity Share Capital	₹30,00,000 of ₹50 each
12% Preference Share Capital	₹5,00,000 of ₹500 each
14% Debenture capital	₹15,00,000 of ₹500 each

- Ascertain the maximum equity share capital and the number of equity shares that can be bought back in the present case.
- What is meant by buy-back through tender offer under SEBI (Buy-Back of Securities) Regulations, 2018?

[June 2022 (5 Marks)]

Ans.

- The buy-back of equity shares in any financial year should not exceed 25% of its total paid-up equity capital in that financial year. $(\text{₹30,00,000} \times 25\% = \text{₹7,50,000})$
- 25% of the aggregate of paid-up capital and free reserves of the company. $[(30,00,000 + 0) \times 25\% = \text{₹7,50,000}]$
- The ratio of the aggregate of secured and unsecured debts owed by the company after buy-back is not more than twice the paid-up capital and its free reserves.

$$\frac{\text{Secured + Unsecured Debts}}{\text{Paid-up Capital + Free Reserves}} \leq 2$$

Let the amount to be buy-back be 'x'.

$$\frac{15,00,000}{30,00,000 - x} = 2$$

$$15,00,000 = 60,00,000 - 2x$$

$$45,00,000 = 2x$$

$$x = 22,50,000$$

Since, out of the above three calculations minimum amount is ₹ 7,50,000; hence buy-back of equity shares having nominal amount of ₹ 7,50,000 is possible.

No. of equity share that can be brought back = $\frac{7,50,000}{50} = 15,000$ equity shares

Tender Offer: Tender offer means an offer by a company to buy-back its own shares or other specified securities through a letter of offer from the holders of the shares or other specified securities of the company.

A company may buy-back its shares or other specified securities from its existing security-holders on a **proportionate basis**.

Reservation for small shareholders: Higher of the following two shall be reserved for small shareholders:

- 15% of the number of securities which the company proposes to buy-back or
- Number of securities entitled as per their shareholding.

Problem No. 6] Following balances were shown in the Balance Sheet of Geeta Ltd. as at 31st March, 2019:

Particulars	(₹ in lakh)
500 lakh, Equity Shares of ₹10 each fully paid-up	5,000
50 lakh, 8% Preference Shares of ₹10 each ₹8 paid-up	400
Capital Reserve	1,950
General Reserve	2,500
Securities Premium Reserve	4,000
Surplus	210
12% Debentures	1,800
Non-Current Investments at cost	3,200
Cash and Bank	2,800

Additional Information:

- The company passed a resolution in the Board of directors' meeting, to buy-back 20% of its equity share capital at ₹ 45 per share. For this purpose, it sold its investments of ₹ 2,200 lakh for ₹ 2,500 lakh.
- Included in its investments were "Investments in own debentures" costing ₹ 150 lakh (face value ₹ 180 lakh). These debentures were cancelled as per Board of directors' meeting's resolution.

You are required to pass necessary journal entries in the books of Geeta Ltd.

[June 2019 (5 Marks)]

Ans.

In the books of Geeta Ltd.

Journal Entries

₹ in lakhs

Date	Particulars	Dr.	Cr.
	Bank A/c	2,500	
	To Investment A/c		2,200
	To Profit & Loss A/c		300
	(Being, sale of investment at profit)		
	Equity Share Capital A/c (100 × 10)	1,000	
	Securities Premium A/c (100 × 35)	3,500	
	To Equity Shareholders A/c (100 × 45)		4,500
	(Being, amount due on buy-back of equity shares as per Shareholders Resolution No. dated)		
	Equity Shareholders A/c	4,500	
	To Bank A/c		4,500
	(Being, amount paid to equity shareholders on buy-back)		
	General Reserve A/c	1,000	
	To Capital Redemption Reserve A/c		1,000
	(Being, amount equal to face value of equity shares brought back transferred to CRR as per requirement of Section 68 of the Companies Act, 2013)		
	12% Debentures A/c	180	
	To Investment in Own Debentures A/c		150
	To Profit on Cancellation of Debentures A/c		30
	(Being, debentures having face value ₹180 lakh cancelled and profit transferred to profit on cancellation of debentures account)		

Problem No. 7] D Ltd. furnished the following summarized Balance Sheet as at 31st March, 2020:

Balance Sheet of D Ltd. as at 31st March, 2020.

Particulars

(₹ 000)

1. EQUITY AND LIABILITIES

(1) Shareholders Funds:

(a) Share Capital:

Authorized Share Capital:

2,50,000 Equity Shares of ₹10 each

5,000 Preference Shares of ₹100 each

2,500

500

3,000

Issued & Subscribed Capital:		
2,50,000 Equity Shares of ₹10 each fully paid-up		2,500
2,000, 10% Preference Shares (₹100 each fully paid-up; issued for the purpose of buy-back)		200
(b) Reserves and Surplus:		
Capital Reserve		
General Reserve		1,000
Securities Premium		3,000
Profit & Loss Account		2,200
(2) Current Liabilities:		3,500
Other Current Liabilities		
		1,400
	Total	<u>13,800</u>
II. ASSETS		
(1) Non-Current Assets:		
(a) Fixed Assets		
Tangible Assets		9,300
(2) Current Assets:		
(a) Current Investment		
		3,000
(b) Cash and Cash Equivalents		
		1,500
	Total	<u>13,800</u>

The Company passed a resolution to buy-back 20% of its equity capital @ ₹50 per share. For this purpose, it sold all of its investment for ₹22,00,000. You are required to pass necessary journal entries and prepare the Balance Sheet after buy-back.
[June 2021 (5 Marks)]

Ans.

In the books of D Ltd.

Journal Entries

(₹ in '000)

Date	Particulars	Dr.	Cr.
	Bank A/c Dr.	2,200	
	Profit & Loss A/c Dr.	800	
	To Investment A/c		3,000
	(Being, sale of investment at profit)		
	Equity Share Capital A/c (50 × 10) Dr.	500	
	Securities Premium A/c (50 × 40) Dr.	2,000	
	To Equity Shareholders A/c (50 × 50)		2,500
	(Being, amount due on buy-back of equity shares as per Shareholders Resolution No. dated)		

Date	Particulars	Dr.	Cr.
	Equity Shareholders A/c	Dr. 2,500	
	To Bank A/c		2,500
	(Being, amount paid to equity shareholders on buy-back)		
	General Reserve A/c	Dr. 500	
	To Capital Redemption Reserve A/c		500
	(Being, amount equal to face value of equity shares brought back transferred to CRR as per requirement of section 68 of the Companies Act, 2013)		

Balance Sheet of D Ltd.

As on 31st March, 2020

EQUITY & LIABILITIES		(₹ in '000)
Shareholders Funds		
<i>Issued, Subscribed & Paid-up Capital:</i>		
Equity Share Capital (2,500 - 500)		2,000
Preference Share Capital		200
Reserve & Surplus		
Capital Reserve		1,000
General Reserve (3,000 - 500)		2,500
Securities Premium (2,200 - 2,000)		200
Profit & Loss Account (3,500 - 800)		2,700
Capital Redemption Reserve		500
Current Liabilities		
Other Current Liabilities		1,400
Total		10,500
ASSETS		(₹ in '000)
Non-Current Assets		
Tangible Assets		9,300
Current Assets		
Cash and Cash Equivalents (1,500 + 2,200 - 2,500)		1,200
Total		10,500

UNIT III : EMPLOYEES SHARE BASED BENEFITS

Q. 7. Write a short note on: Employees Stock Option Scheme (ESOS)

[June 2011 (4 Marks)], [June 2013 (3 Marks)]

Ans. Employee Stock Option [Section 2(37)]: Employee stock option means the option given to the whole-time directors, officers or employees of a company, which gives such

directors, officers or employees the benefit or right to purchase or subscribe at a future date, the securities offered by the company at a pre-determined price.

Issue of Employees Stock Option [Section 62(2)]: A company can offer shares to employees under a scheme of employees stock option by passing **special resolution** and complying with specified conditions.

An unlisted company issuing employee stock options has to comply with the provisions of the Rule 12 of the Companies (Share Capital & Debentures) Rules, 2014.

Listed company issuing employee stock options has to comply with the provisions of the Rule 12 of the SEBI (Share Based Employee Benefits & Sweat Equity) Regulations, 2021.

Example: X Ltd. grants its employee a right to subscribe 1,000 shares at ₹50 when market price of share is ₹140. Employee can exercise such right after 2 years.

If after two years price of the share is ₹180, the employee will exercise the option and can take 1,000 shares at ₹50. Assume that there is no lock-in period and employee decides to sell the shares immediately. Total benefit to employee is ₹1,30,000 [(180 - 50) × 1,000].

If after two years price of shares is ₹40 then employee will not exercise the option as he will loss his money. Thus, ESOS is 'option' but not 'obligation'.

Q. 8. Write a short note on: Employees Stock Purchase Scheme (ESPS)
[Dec. 2008 (4 Marks)], [Dec 2012 (4 Marks)]

Ans. Employee stock purchase scheme means a public issue or otherwise, or through a trust where the trust may undertake secondary acquisition for the purposes of the scheme.

In simple words, under the Employees Stock Purchase Scheme (ESPS), employees are given an option to purchase shares on the spot at a discount price.

Important provisions relating to ESOS are summarized below:

- ◆ Shares under ESOS can be issued as a part of a public issue.
- ◆ The company's are free to determine the price of shares to be issued under an ESOS.
- ◆ Shares issued under an ESOS shall be locked-in for a minimum period of 1 year from the date of allotment.
- ◆ No vesting periods for ESOS as shares are offered on the spot.

Q. 9. Distinguish between: Sweat Equity Shares & Employees Stock Option Scheme (ESOS)
[Dec. 2010 (4 Marks)], [June 2015 (4 Marks)]

Ans. Following are the main points of distinction between Sweat Equity Shares & ESOS:

Points	Sweat Equity Shares	Employees Stock Option Scheme (ESOS)
Meaning	Sweat equity shares means equity shares issued by a company to its directors or employees at a discount or for consideration, other than cash for providing know-how or making available rights in the nature of intellectual property rights or value additions, by whatever name called.	Employee stock option means the option given to the whole-time directors, officers or employees of a company, which gives such directors, officers or employees the benefit or right to purchase or subscribe at a future date, the securities offered by the company at a pre-determined price.

Points	Sweat Equity Shares	Employees Stock Option Scheme (ESOS)
How regulated	Issue of sweat equity shares is regulated by Section 53 of the Companies Act, 2013 and the SEBI (Share Based Employee Benefits & Sweat Equity) Regulations, 2021 and the Companies (Share Capital & Debentures) Rules, 2014.	Issue of shares under employee stock option plan is regulated by Section 2(37) of the Companies Act, 2013 and the SEBI (Share Based Employee Benefits & Sweat Equity) Regulations, 2021.
Issue	Sweat equity shares can be issued at discounted price or free for know-how and services to the company.	Employee stock options can be issued with conversion right at a pre-determined price. The issue price can be less than the intrinsic value of the shares.
Consideration	The consideration can be partly cash and partly IPRs/value addition or fully non-cash consideration.	The consideration has to be paid in cash.
Purpose	Sweat equity shares are mainly intended to be issued to build up equity for directors or employees with technical capability but with meager financial resources.	Employee stock options can be used for multiple purposes – as a talent retention tool, as an incentive, as a remuneration mechanism.
Lock-In-Period	Sweat equity shares have compulsory lock-in-period of 3 years.	The company shall have the freedom to specify the lock-in period for the shares issued pursuant to exercise of ESOS.

Q. 10. Distinguish between: Employees Stock Option Scheme (ESOS) & Employees Stock Purchase Scheme (ESPS)

[Dec. 2012 (4 Marks)]

Ans. Following are the main points of difference between ESOS & ESPS:

Points	Employees Stock Option Scheme (ESOS)	Employees Stock Purchase Scheme (ESPS)
Meaning	Employee stock option scheme means a scheme under which a company grants employee 'stock option' directly or through a trust.	Employee stock purchase scheme means a public issue or otherwise, or through a trust where the trust may undertake secondary acquisition for the purposes of the scheme.
Purchase of shares	Under ESOS, employees are given an option to purchase shares at a later date i.e. after vesting period.	Under ESPS, employees are given an option to purchase shares on the spot at a discount price.
Lock-in	The company may specify the lock-in period for the shares issued pursuant to exercise of option.	Shares issued under an ESPS shall be locked-in for a minimum period of 1 year from the date of allotment.

Points	Employees Stock Option Scheme (ESOS)	Employees Stock Purchase Scheme (ESPS)
Public issue	ESOS has to be approved separately by the company in general meeting by passing special resolution. It cannot be part of public issue.	Shares under ESPS can be issued as a part of a public issue.
Vesting period	Minimum vesting period for ESOS is one year.	No vesting periods for ESPS as shares are offered on the spot.
Compensation Committee	A company has to constitute Compensation Committee for administration & superintendence of the ESOS.	There is no such requirement for ESPS.

Q. 11. What is employee stock option plan? Explain the importance of such plans in the modern time.
[Dec. 2017 (5 Marks)]

Ans. Employee Stock Option [Section 2(37)]: Employee stock option means the option given to the *whole-time directors, officers or employees* of a company, which gives such directors, officers or employees the benefit or right to purchase or subscribe at a *future date*, the securities offered by the company at a *pre-determined price*.

Issue of Employees Stock Option [Section 62(2)]: A company can offer shares to employees under a scheme of employees stock option by passing **special resolution** and complying with specified conditions.

An unlisted company issuing employee stock options has to comply with the provisions of the Rule 12 of the Companies (Share Capital & Debentures) Rules, 2014.

Listed company issuing employee stock options has to comply with the provisions of the Rule 12 of the SEBI (Share Based Employee Benefits & Sweat Equity) Regulations, 2021.

Important Advantages Employees Stock Option:

1. Stock options provide an opportunity to employees to participate and contribute in the growth of the company.
2. Stock option creates long term wealth in the hands of the employees.
3. They are important means to attract, retain and motivate the best available talent for the company.
4. It creates a common sense of ownership between the company and its employees.

Q. 12. During the financial year 2023-2024, the board of directors of CARE Automation Services Limited has issued shares to employees under Employees Stock Option Scheme. Ms. Excellent has recently joined the Board of the company and asks you, the Secretary of the company, as to what details are to be disclosed in the Board's Report for the year ending 31st March, 2024 in this regard. Advise her.
[Dec. 2017 (4 Marks)]

Ans. As per Rule 12(9) of the Companies (Share Capital & Debentures) Rules, 2014, the Board of directors shall disclose in Directors Report following details of the Employees Stock Option Scheme (ESOS):

6.18

- (a) Options granted
- (b) Options vested
- (c) Options exercised
- (d) Total number of shares arising as a result of exercise of option
- (e) Options lapsed
- (f) Exercise price
- (g) Variation of terms of options
- (h) Money realized by exercise of options
- (i) Total number of options in force
- (j) Employee wise details of options granted to:
 - (i) Key Managerial Personnel (KMP).
 - (ii) Any other employee who receives a grant of options in any one year of option amounting to five percent or more of options granted during that year.
 - (iii) Identified employees who were granted option, during any one year, equal to or exceeding one percent of the issued capital (excluding outstanding warrants and conversions) of the company at the time of grant.

Q. 13. Give the disclosures that required to be made in the explanatory statement annexed to the notice for special resolution to be passed by shareholders of a company for approving scheme of Employee Stock Option. [June 2019 (5 Marks)]

Ans. Following are the disclosures in the explanatory statement annexed to the notice for passing of the resolution for approving scheme of Employee Stock Option Scheme:

1. Total number of stock options to be granted.
2. Identification of classes of employees entitled to participate in the Employee Stock Option Scheme.
3. Appraisal process for determining the eligibility of employees to the Employee Stock Option Scheme.
4. Requirements of vesting and period of vesting.
5. Maximum period within which the options shall be vested.
6. Exercise price or the formula for arriving at the same.
7. Exercise period and process of exercise.
8. Lock-in period, if any.
9. Maximum number of options to be granted per employee and in aggregate.
10. Method which the company shall use to value its options.
11. Conditions under which option vested in employees may lapse e.g. in case of termination of employment for misconduct.
12. Specified time period within which the employee shall exercise the vested options in the event of a proposed termination of employment or resignation of employee.

13. A statement to the effect that the company shall comply with the applicable accounting standards.

PROBLEMS & SOLUTIONS

Problem No. 8] A company has its share capital divided into shares of ₹ 10 each. On 1st April, 2021, it granted 5,000 shares as employee's stock options at ₹ 40 per share, when the market price was ₹ 130 per share. The options were to be exercised between 16th December, 2021 and 15th March, 2022. The employees exercised their options for 4,500 shares only; the remaining options lapsed. The company closes its books on 31st March every year. Show journal entries in the books of the company. [Dec. 2015 (5 Marks)]

Ans.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
16.12.2021	Bank A/c (4,500 × 40)		
to	Employees Compensation Expenses A/c (130 - 40) × 4,500	Dr. 1,80,000	
15.3.2022	To Equity Share Capital A/c (4,500 × 10)	Dr. 4,05,000	
	To Securities Premium A/c (4,500 × 120)		45,000
	(Being, shares issued to the employees against the options vested to them in pursuance of Employee Stock Option Plan)		5,40,000
31.3.2022	Profit & Loss A/c		
	To Employees Compensation Expenses A/c	Dr. 4,05,000	
	(Being, transfer of employee compensation to Profit & Loss A/c)		4,05,000

Problem No. 9] On 1st January, 2024, Tullp Ltd. offered 100 shares of ₹ 10 each to each of its 500 employees at ₹ 30 per share. The employees were given time up to 31st March, 2024 to accept the offer. The shares issued under ESOP shall be subject to lock-in-period of 2 years from the grant date. Other details provided are as under:

- (i) The market price of shares of the company on the grant date is ₹ 50 per share.
 - (ii) Due to post vesting restriction on transfer of shares, the fair market value of shares is estimated at ₹ 40 per share.
 - (iii) On 31st March, 2024, 400 employees accepted the offer and paid ₹ 30 per share.
- You are required to pass necessary journal entries to record the allotment of shares in the books of the company. [Dec. 2016 (5 Marks)]

Ans. Fair value of an option = ₹ 40 - ₹ 30 = ₹ 10

Number of employees accepting the offer = 400 employees

Number of shares issued = 400 employees × 100 shares = 40,000 shares

Fair value of ESOP = 40,000 shares × ₹ 10 = ₹ 4,00,000

Expenses recognized in 2023-2024 = ₹ 4,00,000

In the books of Tulip Ltd.
Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
1.1.2024	Bank A/c (40,000 × 30) Employees Compensation Expenses A/c (40 - 30) × 40,000 To Equity Share Capital A/c (40,000 × 10) To Securities Premium A/c (40,000 × 30) (Being, shares issued to the employees against ESOP at a premium of ₹ 30 per share)	Dr. 12,00,000 Dr. 4,00,000	4,00,000 12,00,000
31.3.2024	Profit & Loss A/c To Employees Compensation Expenses A/c (Being, transfer of employee compensation expenses to Profit & Loss A/c)	Dr. 4,00,000	4,00,000

Problem No. 10] XYZ Ltd. granted 2,000 options on 1st April, 2015 at ₹50 (nominal value ₹10 each) when the market price was ₹170. The vesting period was two and half years (2½). The maximum exercise period was one year. On 1st May, 2017, 500 vested options lapsed and 1,200 options were exercised on 30th June, 2018. Remaining 300 options lapsed at the end of exercise period. Pass necessary journal entries. [Dec. 2020 (5 Marks)]

Ans.

Fair value of an option = ₹ 170 - ₹ 50 = ₹ 120

Fair value of ESOS = 2,000 shares × ₹ 120 = ₹ 2,40,000

Expenses recognized in 2015-2016 (full year) = ₹ 96,000

Expenses recognized in 2016-2017 (full year) = ₹ 96,000

Expenses recognized in 2017-2018 (half year) = ₹ 48,000

However, in 2nd year 500 options lapse; hence remaining options are 1,500.

Fair value of 1,500 Options = 1,500 × 120 = 1,80,000.

Cumulative balance in Employees Stock Option Outstanding A/c up to 2nd year = 96,000 + 96,000 = 1,92,000

Hence, excess expenses to be reversed by transfer to General Reserve A/c = 1,92,000 - 1,80,000 = 12,000.

In the books of XYZ Ltd.

Journal Entries

Date	Particulars	Dr. (₹)	Cr. (₹)
1.04.2015	Employees Compensation Expenses A/c To Employees Stock Option Outstanding A/c (Being, compensation expense recognized in respect of 2,000 options granted to employees at discount of ₹120 each, amortized on straight line basis over 2.5 years)	Dr. 96,000	96,000

Date	Particulars	Dr. (₹)	Cr. (₹)
31.3.2016	Profit & Loss A/c To Employees Compensation Expenses A/c (Being, transfer of employee compensation transfer to Profit & Loss A/c)	Dr. 96,000	96,000
31.3.2017	Employees Compensation Expenses A/c To Employees Stock Option Outstanding A/c (Being, compensation expense recognized in respect of 2,000 options granted to employees at discount of ₹ 120 each, amortized on straight line basis over 2.5 years)	Dr. 96,000	96,000
31.3.2017	Profit & Loss A/c To Employees Compensation Expenses A/c (Being, transfer of employee compensation transfer to Profit & Loss A/c)	Dr. 96,000	96,000
1.05.2017	Employees Stock Option Outstanding A/c To General Reserve A/c (Being, 500 vested options lapse and excess expenses to be reversed by transfer to general reserve account) [see working]	Dr. 12,000	12,000
30.09.2017	Employees Stock Option Outstanding A/c To General Reserve A/c [(170 - 50) × 300] (Being, balance in Employees Stock Option Outstanding A/c on lapse of another 300 Options transferred to general reserve account)	Dr. 36,000	36,000
30.6.2018	Bank A/c (1,200 × 50) Employees Stock Option Outstanding A/c (170 - 50) × 1,200 To Equity Share Capital A/c (1,200 × 10) To Securities Premium A/c (1,200 × 160) (Being, 1,200 shares allotted to employees under ESOS at a premium of ₹ 160 per share, ₹ 50 per share received in cash balance being ESOS entitlement)	Dr. 60,000 Dr. 1,44,000	12,000 1,92,000

CONSOLIDATION OF ACCOUNTS

THEORETICAL QUESTIONS

Q. 1. Under what circumstances, a company is required to present a 'consolidated financial statement'?
[Dec. 2003 (4 Marks)]

Or

Consolidation of financial statements is mandatory for all companies including unlisted companies and private companies.
[June 2017 (5 Marks)]

Ans.

A company is required to present a 'consolidated financial statement' if it is holding company and other is subsidiary of earlier company.

Consolidation of financial statements [Section 129(3)]: Where a company has one or more subsidiaries or associate companies, it shall, in addition to financial statements, prepare a consolidated financial statement of the company and of all the subsidiaries and associate companies in the same form and manner as that of its own and in accordance with applicable accounting standards.

Such consolidated financial statement shall also be laid before the AGM of the company along with the laying of its financial statement.

The Central Government has been given power to provide for the consolidation of accounts of companies in such manner as may be prescribed.

Statement containing salient features of financial statements of subsidiaries:

The Company shall also attach along with its financial statement, a separate statement containing the salient features of the financial statement of its subsidiary or subsidiaries and associate company or companies in prescribed form.

As per Rule 5 of the Companies (Accounts) Rules, 2014, the statement containing the salient feature of the financial statement of a company's subsidiary, associate company and joint venture shall be in **Form AOC-1**.

Manner of consolidation of accounts [Rule 6]: The consolidation of financial statements of the company shall be made in accordance with the provisions of Schedule III and the applicable Accounting Standards.

In case of a company covered under section 129(3) which is not required to prepare consolidated financial statements under the Accounting Standards, it shall be sufficient

if the company complies with provisions on consolidated financial statements provided in Schedule III.

Provisions in respect of preparation of consolidated financial statements by a company shall not apply if it meets the following conditions:

- (i) It is a wholly-owned subsidiary, or is a partially-owned subsidiary of another company and all its other members, including those not otherwise entitled to vote, having been intimated in writing and for which the proof of delivery of such intimation is available with the company, do not object to the company not presenting consolidated financial statements.
- (ii) It is a company whose securities are not listed or are not in the process of listing on any stock exchange, whether in India or outside India.
- (iii) Its ultimate or any intermediate holding company files consolidated financial statements with the Registrar which are in compliance with the applicable Accounting Standards.

Provisions in respect of preparation of consolidated financial statements by a company is also not applicable in respect of consolidation of financial statement by a company having subsidiary or subsidiaries incorporated outside India only for the financial year commencing on or after 1st April, 2014.

Thus, consolidation of financial statement is mandatory for all companies except in those cases where such provisions do not apply as stated above.

Q. 2. Issue of bonus shares by the subsidiary company does not affect the cost of control. Comment. [Dec. 2009 (6 Marks)]

Ans. Issue of bonus shares by the subsidiary company does not affect the cost of control. This can be discussed under following two headings:

- (1) **Issue of bonus out of pre-acquisition profit:** This will not affect cost of control because share of holding company in pre-acquisition profit is reduced and on the other hand paid up value of the shares held by them is increased.
- (2) **Issue of bonus out of post-acquisition profit:** This will not affect cost of control because share of holding company in post-acquisition profit is reduced and on the other hand paid up value of the shares held by them is increased.

Q. 3. Distinguish between: Holding and Subsidiary Companies. [Dec. 2010 (4 Marks)]

Ans. Holding and Subsidiary companies are relative terms. A company is a holding company of another if the other is its subsidiary.

Holding Company [Section 2(46)]: Holding company, in relation to one or more other companies, means a company of which such companies are subsidiary companies.

Subsidiary Company [Section 2(87)]: Subsidiary company in relation to any other company (that is to say the holding company), means a company in which the holding company -

- (a) Controls the composition of the Board of Directors or
- (b) Exercises or controls more than 50% of the total voting power either at its own or together with one or more of its subsidiary companies.

However, prescribed class or classes of holding companies shall not have layers of subsidiaries beyond the prescribed limit.

The composition of a company's Board of Directors shall be deemed to be controlled by another company if that other company by exercise of some power exercisable by it at its discretion can appoint or remove all or a majority of the directors.

Q. 4. What is 'cost of control' in the context of preparing consolidated balance sheet?
[June 2014 (5 Marks)]

Ans.

In actual practice, it rarely happens that the cost of acquisition of shares in the subsidiary company agrees exactly with intrinsic value of the shares on the date of acquisition.

If the price paid by the holding company for the shares acquired in the subsidiary company is more than the intrinsic value of the shares acquired, the difference should be treated as Cost of Control. It may be Goodwill or Capital Reserve and calculated as shown below:

Cost of Control	₹
Cost of Investment	xxxx
(-) Face value of shares	(xxx)
(-) Pre-acquisition dividend	(xxx)
(-) Pre-acquisition profits	(xxx)
Goodwill/(Capital Reserve)	xxxx

Q. 5. How are pre-acquisition losses of subsidiary companies shared and accounted for?
[Dec. 2014 (3 Marks)]

Ans. Accumulated losses of the subsidiary company up to the date of acquisition of shares by the holding company are called pre-acquisition losses. Both the holding and minority must share such losses in proportion to their holdings.

The minority shareholders share of such losses should be deducted from the amount of Minority Interest. But the holding company's share of such losses should be treated as capital loss and deducted from 'cost of control'.

Q. 6. When dividend is declared and paid by a subsidiary company out of pre-acquisition and post-acquisition profits, how will the same be dealt with in the books of a holding company?
[Dec. 2015 (3 Marks)]

Ans. Treatment of dividend declared and paid by a subsidiary company: When a subsidiary company pays a dividend, the holding company will naturally receive its due share. On receipt, the holding company will naturally debit the bank account; the question is which account is to be credited.

- (1) Dividend received out of pre-acquisition profits/period:** It should be treated as capital receipt and credited to Investment A/c.
- (2) Dividend out of post-acquisition profits or period:** It should be treated as revenue income and credited to the Profit & Loss A/c.

Q. 7. Distinguish between: Subsidiary Company & Associate Company
[Dec. 2016 (5 Marks)]

Ans. Following are the main points of distinction between subsidiary & associate company:

Points	Subsidiary Company	Associate Company
Meaning	Subsidiary company means a company in which the holding company controls the composition of the Board of Directors or exercises or controls more than 50% of the total voting power either at its own or together with one or more of its subsidiary companies.	Associate company in relation to another company, means a company in which that other company has a significant influence, but which is not a subsidiary company of the company having such influence and includes a joint venture company.
Holding of Paid-up capital	Holding company holds more than 50% share capital in subsidiary company.	In associate companies, one company held's more than 20% but less than 50% of share capital.
Control	Holding company has major control in subsidiary company.	In associate companies, one company has only significant influence over other company but not major control.
Section	The term 'subsidiary company' is defined in Section 2(87).	The term 'associate company' is defined in Section 2(6).

PROBLEMS & SOLUTIONS

Problem No. 1] Following are the balance sheets of H Ltd. & S Ltd. as at 31st December, 2020:

	H Ltd. (₹)	S Ltd. (₹)
LIABILITIES		
Equity Share (₹ 100 each fully paid-up)	5,00,000	2,00,000
General Reserve	1,00,000	-
Profit & Loss Account	80,000	(1,00,000)
14% Debentures	-	1,00,000
Creditors	75,000	45,000
	<u>7,55,000</u>	<u>2,45,000</u>
ASSETS		
Fixed Assets	3,50,000	1,50,000
Stock	90,000	40,000
Debtors	60,000	30,000
14% Debentures in S Ltd. (at par)	60,000	-
Equity Shares in S Ltd. @ ₹ 80 per share	1,20,000	-
Bank	75,000	25,000
	<u>7,55,000</u>	<u>2,45,000</u>

H Ltd. acquired 1,500 shares in S Ltd. on 1st May, 2020. The profit and loss account of S Ltd. showed a debit balance of ₹ 1,50,000 on 1st January, 2020. During March, 2020, goods costing ₹ 6,000 were destroyed by fire, against which the insurance

company paid ₹2,000 only to S Ltd. Creditors of S Ltd. include ₹20,000 for goods supplied by H Ltd. on which H Ltd. made a profit of ₹2,000. Half of the goods were sold out of this. An item of plant (included in fixed assets) of S Ltd. had book value of ₹15,000. It was to be revalued at ₹20,000 on 1st January, 2020 (ignore depreciation). Prepare consolidated balance sheet as on 31st December, 2020.

[June 2011 & June 2013 (9 Marks)]

[Dec. 2021(8 Marks)]

Ans.

Control Ratio:

$$\frac{\text{No. of shares held by holding}}{\text{Total shares of subsidiary}} \times 100 = \frac{1,500}{2,000} \times 100 = 75\%$$

Consolidated Balance Sheet of H Ltd. & S Ltd.

As on 31.12.2020

EQUITY & LIABILITIES		₹	₹
Shareholder's Funds			
Share Capital (H Ltd.)			5,00,000
General Reserve (H Ltd.)			1,00,000
Adjusted P & L Balance			1,06,000
Minority Interest			
- For Shares	26,250		
- For Debentures	40,000	66,250	
Current Liabilities			
Trade Creditors			
- H Ltd.	75,000		
- S Ltd.	45,000		
(-) Mutual Debts	(20,000)	1,00,000	
			8,72,250
ASSETS		₹	₹
Non-Current Assets			
Goodwill			68,250
Fixed Assets			
- H Ltd.	3,50,000		
- S Ltd.	1,50,000		
(+) Revaluation Profit	5,000	5,05,000	
Current Assets			
Stock in Trade			
- H Ltd.	90,000		
- S Ltd.	40,000		
(-) Stock Reserve (See Note)	(1,000)	1,29,000	
Debtors			
- H Ltd.	60,000		
- S Ltd.	30,000		
(-) Mutual Debts	(20,000)	70,000	

EQUITY & LIABILITIES		₹	₹
Bank		75,000	
- H Ltd.		25,000	1,00,000
- S Ltd.			8,72,250

Working Notes:

Dr.		Profit & Loss A/c (S Ltd.)	Cr.
To Balance b/d	1,50,000	By Profit during year	54,000
To Goods lost (6,000 - 2,000)	4,000	By Balance c/d	1,00,000
	1,54,000		1,54,000

Analysis of profits of S Ltd.:

Particulars	H Ltd.	Minority	Total
	75%	25%	100%
Pre-acquisition/Capital Profit:			
Revaluation profit on fixed assets	3,750	1,250	5,000
Opening P & L balance	(1,12,500)	(37,500)	(1,50,000)
Goods lost	(3,000)	(1,000)	(4,000)
Profit during the year (54,000 × 4/12)	13,500	4,500	18,000
	(98,250)	(32,750)	(1,31,000)
Post-acquisition/Revenue Profit:			
Profit during the year (54,000 × 8/12)	27,000	9,000	36,000
	27,000	9,000	36,000

Minority Interest	Shares	Debentures
Share Capital	50,000	40,000
<i>Share of profits:</i>		
- Pre-acquisition	(32,750)	-
- Post-acquisition	9,000	-
	26,250	40,000

Cost of Control	Shares	Debentures
Cost of Investment	1,20,000	60,000
(-) Face value of shares	(1,50,000)	(60,000)
(+) Pre-acquisition loss	98,250	-
Goodwill	68,250	-

Dr.		Adjusted Profit & Loss A/c (H Ltd.)	Cr.
To Stock Reserve (Note 1) (20,000 × 50% × 10%)	1,000	By Balance b/d	80,000
To Balance c/d	1,06,000	By Share in profit of subsidiary	27,000
	1,07,000		1,07,000

Note 1: Calculation of profit % for stock reserve:

$$\frac{\text{Profit}}{\text{Sale price}} \times 100 = \frac{2,000}{20,000} \times 100 = 10\%$$

Problem No. 2] The balance sheets of Chanderma Ltd. and its subsidiary Tara Ltd. as on 31st March, 2022 are as follows:

I EQUITY AND LIABILITIES

	Chanderma Ltd.		Tara Ltd.	
(1) Shareholders' funds:				
(a) Share capital- issued, subscribed & paid-up:				
Preference share capital	10,00,000			
Equity share capital (₹ 100 each fully paid-up)	50,00,000	60,00,000	15,00,000	15,00,000
(b) Reserves and surplus:				
General reserve	34,00,000		60,000	
Surplus	36,00,000	70,00,000	10,80,000	11,40,000
(2) Current Liabilities:				
(a) Trade payables	10,00,000		4,41,500	
(b) Bills payable		10,00,000	2,41,500	6,83,000
		<u>1,40,00,000</u>		<u>33,23,000</u>

II ASSETS

(1) Non-current assets:				
(a) Fixed assets:				
Land	35,60,000		7,00,000	
Properties	37,60,000		4,00,000	
Plant and machines	14,00,000	87,20,000	9,13,000	20,13,000
(b) Long-term investment:				
12,000 shares of Tara Ltd. on 1st April, 2021		18,00,000		
(2) Current assets:				
(a) Inventories	13,60,000		5,06,000	
(b) Trade receivables and cash	21,20,000	34,80,000	8,04,000	13,10,000
		<u>1,40,00,000</u>		<u>33,23,000</u>

The other information are:

- Surplus of Chanderma Ltd. includes dividend of 10% received from Tara Ltd.
- On 1st April, 2021 surplus of Tara Ltd. stood at ₹7,75,000 and general reserve at ₹30,000. Chanderma Ltd. revalued plant and machinery of Tara Ltd. at the time of purchase of shares by ₹2,00,000 more than its book value.
- Inventory of Chanderma Ltd. includes ₹80,000 of inventory at cost purchased from Tara Ltd. Further, trade receivables of Tara Ltd. include ₹2,40,000 for the sale to Chanderma Ltd. on which Tara Ltd. makes a profit of ₹60,000.
- Tara Ltd. made a bonus issue during the year out of pre-acquisition profits for ₹6,00,000. This is not recorded in the books.

Prepare consolidated balance sheet.

[June 2014 (8 Marks)]

Ans.

Control Ratio:

$$\frac{\text{No. of shares held by holding}}{\text{Total shares of subsidiary}} \times 100 = \frac{12,000}{15,000} \times 100 = 80\%$$

Consolidated Balance Sheet of Chanderma Ltd. & Tara Ltd.
As on 31st March, 2022

	₹	₹
EQUITY & LIABILITIES		
Shareholder's Funds		
Preference Share Capital (Chanderma Ltd.)		10,00,000
Equity Share Capital (Chanderma Ltd.)		50,00,000
General Reserve (Chanderma Ltd.)		34,00,000
Adjusted P & L Balance (Chanderma Ltd.)		38,48,000
Minority Interest		5,68,000
Capital Reserve		2,04,000
Current Liabilities		
Trade Payables		
- Chanderma Ltd.	10,00,000	
- Tara Ltd.	4,41,500	
(-) Mutual Debts	(2,40,000)	12,01,500
Bills Payables		
- Chanderma Ltd.	-	
- Tara Ltd.	2,41,500	2,41,500
		1,54,63,000
ASSETS		
Non-Current Assets		
Land		
- Chanderma Ltd.	35,60,000	
- Tara Ltd.	7,00,000	42,60,000
Properties		
- Chanderma Ltd.	37,60,000	
- Tara Ltd.	4,00,000	41,60,000
Plant & Machinery		
- Chanderma Ltd.	14,00,000	
- Tara Ltd.	9,13,000	
(+) Revaluation Profit	2,00,000	25,13,000
Current Assets		
Inventories		
- Chanderma Ltd.	13,60,000	
- Tara Ltd.	5,06,000	
(-) Stock Reserve	(20,000)	18,46,000

Trade Receivables & Cash		
- Chanderma Ltd.	21,20,000	
- Tara Ltd.	8,04,000	
(-) Mutual Debts	(2,40,000)	26,84,000
		<u>1,54,63,000</u>

Working Notes:

Dr.		General Reserve A/c (Tara Ltd.)		Cr.	
		By Balance b/d			30,000
		By Profit & Loss A/c			30,000
To Balance c/d	60,000	(Transfer)			
	<u>60,000</u>				<u>60,000</u>

Dr.		Profit & Loss A/c (Tara Ltd.)		Cr.	
To Dividend A/c	1,50,000	By Balance b/d			7,75,000
To Bonus Shares	6,00,000	By Profit during the year [Bal. Fig.]			4,85,000
To General Reserve	30,000				
To Balance c/d	4,80,000				
	<u>12,60,000</u>				<u>12,60,000</u>

Analysis of profits of Tara Ltd.:

Particulars	Chanderma Ltd. 80%	Minority 20%	Total 100%
Pre-acquisition/Capital Profit:			
Revaluation Profit	1,60,000	40,000	2,00,000
Opening General Reserve	24,000	6,000	30,000
Opening Profit & Loss A/c	6,20,000	1,55,000	7,75,000
Dividend	(1,20,000)	(30,000)	(1,50,000)
Bonus Shares	(4,80,000)	(1,20,000)	(6,00,000)
	<u>2,04,000</u>	<u>51,000</u>	<u>2,55,000</u>
Post-acquisition/Revenue Profit:			
Profit during the year	3,88,000	97,000	4,85,000
<i>(Since share has been acquired on 1.4.2021 all the profit for the year will be post acquisition profit)</i>			
	<u>3,88,000</u>	<u>97,000</u>	<u>10,85,000</u>

Minority Interest	₹	Cost of Control	₹
Share Capital	4,20,000	Cost of Investment	18,00,000
Share of Profits:		(-) Face value of shares	(16,80,000)
- Pre-acquisition	51,000	(-) Pre-acquisition profits	(2,04,000)
- Post-acquisition	97,000	(-) Pre-acquisition dividend	(1,20,000)
	<u>5,68,000</u>	Capital Reserve	(2,04,000)

Adjusted Profit & Loss A/c (Chanderna Ltd.)		Cr.
To Pre-acquisition Dividend (1,50,000 × 80%)	1,20,000	36,00,000
To Stock Reserve (80,000 × 25%)	20,000	3,88,000
To Balance c/d	38,48,000	
	<u>39,88,000</u>	<u>39,88,000</u>
		By Balance b/d By Share in profit of subsidiary

Since bonus issue was not recorded in the books of subsidiary (Tara Ltd.), it will have to be recorded. Since opening balance of general reserve is not sufficient bonus must have been done out of balance of Profit & Loss A/c. Net effect of this is that, before solving problem we have to adjust the balance sheet of subsidiary i.e. Tara Ltd. as follows:

- Increasing share capital of Tara Ltd. by ₹6,00,000 and
- Decreasing Profit & Loss A/c by ₹6,00,000.

Hence, new balance of Tara Ltd. for: Share capital = ₹21,00,000 (15,00,000 + 6,00,000) & Profit & Loss A/c = ₹4,80,000 (10,80,000 - 6,00,000). Further both holding & minority will get bonus issue; hence it will not affect control percentage.

$$\text{Profit on Sales} = \frac{60,000}{2,40,000} \times 100 = 25\%$$

Problem No. 3] The balance sheets of H Ltd. and its subsidiary S Ltd. as on 31st March, 2023 are given below:

I EQUITY AND LIABILITIES

	H Ltd.		S Ltd.	
	₹	₹	₹	₹
(1) Shareholders' funds:				
(a) Share capital-issued, subscribed & paid-up:				
Equity share capital (₹10 each fully paid-up)		15,00,000		3,00,000
(b) Reserves and surplus:				
General reserve	6,00,000		2,25,000	
Surplus	<u>3,00,000</u>	9,00,000	<u>75,000</u>	3,00,000
(2) Current Liabilities:				
Trade payables		<u>4,50,000</u>		<u>1,50,000</u>
		<u>28,50,000</u>		<u>7,50,000</u>

II ASSETS

(1) Non-current assets:

(a) Fixed assets:

(i) Machinery	9,00,000		2,70,000	
(ii) Furniture	1,50,000		51,000	
(iii) Other assets	<u>13,20,000</u>	23,70,000	<u>4,29,000</u>	7,50,000

(b) Long-term investment:

2,400 shares at ₹200 each in S Ltd. (at cost)

4,80,000
28,50,000

7,50,000

Other relevant information:

- (i) Balance in general reserve and statement of profit and loss (Cr.) of S Ltd. stood at ₹ 75,000 and ₹ 45,000 respectively on the date of acquisition of its 80% shares by H Ltd.
- (ii) Machinery (book value ₹ 3,00,000) and furniture (book value ₹ 60,000) of S Ltd. were revalued at ₹ 4,50,000 and ₹ 45,000 respectively for the purpose of fixing the price of its shares. Book value of other assets remaining unchanged. These values are to be considered for consolidation purpose.

From the above balance sheets and additional information, prepare a consolidated balance sheet as at that date. [Dec. 2014 (8 Marks)]

Ans.

Consolidated Balance Sheet of H Ltd. & S Ltd.

As on 31.3.2023

EQUITY & LIABILITIES		₹	₹
Shareholder's Funds			
Equity Share Capital (H Ltd.)			15,00,000
General Reserve (H Ltd.)			6,00,000
Adjusted P & L Balance (H Ltd.)			4,33,800
Minority Interest			1,44,450
Current Liabilities			
Trade Payables			
- H Ltd.	4,50,000		
- S Ltd.	1,50,000		6,00,000
			<u>32,78,250</u>
ASSETS		₹	₹
Non-Current Assets			
Goodwill			36,000
Machinery			
- H Ltd.	9,00,000		
- S Ltd.	2,70,000		
(+) Revaluation Profit (4,50,000 - 3,00,000)	1,50,000		
(-) Depreciation on increased value (1,50,000 × 10%)	(15,000)		13,05,000
Furniture			
- H Ltd.	1,50,000		
- S Ltd.	51,000		
(-) Revaluation Loss (45,000 - 60,000)	(15,000)		
(+) Depreciation on decreased value (15,000 × 15%)	2,250		1,88,250
Other Assets			
- H Ltd.	13,20,000		
- S Ltd.	4,29,000		17,49,000
			<u>32,78,250</u>

Working Notes:

Dr.		General Reserve A/c (S Ltd.)		Cr.	
			By Balance b/d		75,000
To Balance c/d	2,25,000		By Profit & Loss A/c (transfer)		1,50,000
	2,25,000				2,25,000

Dr.		Profit & Loss A/c (S Ltd.)		Cr.	
			By Balance b/d		45,000
To General Reserve A/c	1,50,000		By Profit after acquisition		1,80,000
To Balance c/d	75,000				2,25,000
	2,25,000				

Analysis of profits of S Ltd.:

Particulars	H Ltd.	Minority	Total
	80%	20%	100%
Pre-acquisition/Capital Profit:			
Revaluation Profit on Machinery	1,20,000	30,000	1,50,000
Revaluation Loss on Furniture	(12,000)	(3,000)	(15,000)
Opening General Reserve	60,000	15,000	75,000
Opening P & L balance	36,000	9,000	45,000
	2,04,000	51,000	2,55,000
Post-acquisition/Revenue Profit:			
Depreciation on increased value	(12,000)	(3,000)	(15,000)
Depreciation on decreased value	1,800	450	2,250
Profit after acquisition	1,44,000	36,000	1,80,000
	1,33,800	33,450	1,67,250

Minority Interest	₹
Share Capital	60,000
Share of profits	
- Pre-acquisition	51,000
- Post-acquisition	33,450
	1,44,450

Cost of Control	₹
Cost of Investment	4,80,000
(-) Face value of shares	(2,40,000)
(-) Pre-acquisition profits	(2,04,000)
	36,000
Goodwill	

Dr.		Adjusted Profit & Loss A/c (H Ltd.)		Cr.	
			By Balance b/d		3,00,000
To Balance c/d	4,33,800		By Share in profit of subsidiary		1,33,800
	4,33,800				4,33,800

Rate of depreciation is calculated as follows:

Balance sheet value of machinery is ₹2,70,000, whereas book value at the time of revelation is ₹3,00,000. Thus, depreciation of ₹30,000 has been provided.

Balance sheet value of furniture is 51,000, whereas book value at the time of revelation is ₹60,000. Thus, depreciation of ₹9,000 has been provided.

$$\text{Machinery} = \frac{30,000}{3,00,000} \times 100 = 10\%$$

$$\text{Furniture} = \frac{9,000}{60,000} \times 100 = 15\%$$

Problem No. 4] Prepare the consolidated balance sheet from the following balance sheets of H. Ltd. and S. Ltd.:

	(₹ in '000)	
	<u>H Ltd.</u>	<u>S Ltd.</u>
I EQUITY AND LIABILITIES		
(1) Shareholders' funds:		
(a) Share capital		
Equity share capital of ₹10	10,000	2,000
(b) Reserves and surplus:		
Reserve fund	1,000	600
Surplus	4,000	1,200
(2) Current Liabilities:		
(a) Trade payables	2,000	1,200
(b) Other current liabilities (bills payable)	-	300
	<u>17,000</u>	<u>5,300</u>
II ASSETS		
(1) Non-current assets:		
(a) Sundry assets	8,000	1,200
(b) Investment (1,50,000 shares in S Ltd. at cost)	1,500	-
(2) Current Assets		
(a) Inventories	6,100	2,400
(b) Trade receivables	1,300	1,700
(c) Other current assets (bills receivables)	100	-
	<u>17,000</u>	<u>5,300</u>

Following additional information is also given:

- (i) S Ltd. has earned all the profits only since the above 1,50,000 shares were acquired by H Ltd.
- (ii) On the date of acquisition of these 1,50,000 shares by H Ltd., S Ltd. had balance in the reserve fund of ₹6,00,000.
- (iii) The bills payable of S Ltd. were in favour of H Ltd. which had discounted ₹2,00,000 of them.
- (iv) Sundry assets of S Ltd. were undervalued by ₹2,00,000. Stock of H Ltd. includes goods of ₹5,00,000 purchased from S Ltd. on which S. Ltd. made a profit of 25% on cost.

[June 2015 (8 Marks)]

Ans.

Consolidated Balance Sheet of H Ltd. & S Ltd.

EQUITY & LIABILITIES		(₹ in '000)
Shareholder's Funds		
Equity Share Capital (H Ltd.)		10,000
Reserve Fund (H Ltd.)		1,000
Adjusted P & L Balance (H Ltd.)		4,800
Capital Reserve		600
Minority Interest		1,000
Current Liabilities		
Trade Payables	2,000	
- H Ltd.	1,200	
- S Ltd.		3,200
Other Current Liabilities (<i>bills payable</i>)		
- H Ltd.	-	
- S Ltd.	300	
(-) Mutual debt	(100)	200
		20,800
ASSETS		(₹ in '000)
Non-Current Assets		
Sundry Assets		
- H Ltd.	8,000	
- S Ltd.	1,200	
(+) Revaluation profit	200	9,400
Current Assets		
Inventories		
- H Ltd.	6,100	
- S Ltd.	2,400	
(-) Stock Reserve	(100)	8,400
Trade Receivables		
- H Ltd.	1,300	
- S Ltd.	1,700	3,000
Other Current Assets (<i>bills receivables</i>)		
- H Ltd.	100	
- S Ltd.	-	
(-) Mutual debt	(100)	-
		20,800

Working Notes:

Dr.	Reserve Fund A/c (S Ltd.)		Cr.
To Balance c/d	600	By Balance b/d [Bal. Fig.]	600
	600		600

Dr.		Surplus A/c (S Ltd.)		Cr.	
To Balance c/d		By Balance b/d [Bal. Fig.]			
		1,200	By Profit after acquisition		1,200
		1,200			1,200

Analysis of profits of S Ltd.:

(₹ in '000)

Particulars	H Ltd.	Minority	Total
	75%	25%	100%
Pre-acquisition/Capital Profit:			
Revaluation profit	150	50	200
Opening general reserve	450	150	600
	600	200	800
Post-acquisition/Revenue Profit:			
Profit after acquisition	900	300	1,200
	900	300	1,200

Minority Interest	₹ in '000
Share Capital	500
Share of profits:	
- Pre-acquisition	200
- Post-acquisition	300
	1,000

Cost of Control	₹ in '000
Cost of Investment	1,500
(-) Face value of shares	(1,500)
(-) Pre-acquisition profits	(600)
Capital Reserve	(600)

Dr.		Adjusted Profit & Loss A/c (H Ltd.)		Cr.	
To Stock Reserve (500 × 20%)	100	By Balance b/d			4,000
To Balance c/d	4,800	By Share in profit of subsidiary			900
	4,900				4,900

Profit % for stock reserve: Profit is 25% on cost that means it is 20% on sales.

Problem No. 5] The extracts of balance sheets of H Ltd. and S Ltd. as on 31st March, 2024 are given below:

I. EQUITY AND LIABILITIES	H Ltd.	S Ltd.
	₹	₹
(1) Shareholders' funds:		
(a) Equity share capital of ₹ 10 each	5,00,000	2,00,000
(b) Reserves and surplus:		
Securities premium	50,000	10,000
General reserve	1,00,000	50,000
Surplus	75,000	20,000
(2) Current Liabilities:		
Trade payables	80,000	40,000
	<u>8,05,000</u>	<u>3,20,000</u>

II. ASSETS**(1) Non-current assets:****(a) Fixed assets:**

Tangible assets

5,10,000 3,20,000

(b) Long-term investment

(15,000 equity shares in S Ltd. at cost)

2,95,000

8,05,000 3,20,000

H Ltd. acquired shares in S Ltd. on 31st March, 2024.

You are required to calculate —

(a) Minority interest and**(b) Goodwill/capital reserve**

[Dec. 2014 (5 Marks)]

Ans.

Analysis of profits of S Ltd.:

Particulars	H Ltd. 75%	Minority 25%	Total 100%
Pre-acquisition/Capital Profit:			
Securities premium	7,500	2,500	10,000
General reserve	37,500	12,500	50,000
Surplus (P & L balance)	15,000	5,000	20,000
	60,000	20,000	80,000
Post-acquisition/Revenue Profit:	-	-	-
	-	-	-

Minority Interest	₹
Share Capital	50,000
Share of profits:	
- Pre-acquisition	20,000
- Post-acquisition	-
	70,000

Cost of Control	₹
Cost of Investment	2,95,000
(-) Face value of shares	(1,50,000)
(-) Pre-acquisition profits	(60,000)
Goodwill	85,000

Calculation of minority interest by shortcut method:

Calculate net assets of S Ltd.

Net Assets = Total assets - Outsiders liability

= 3,20,000 - 40,000

= 2,80,000

Minority interest = 2,80,000 × 25% = 70,000

Problem No. 6] Prepare the consolidated balance sheet from the following balance sheets of Happy Ltd. and Joy Ltd. as on 31st March, 2023:

I. EQUITY AND LIABILITIES

	Happy Ltd.	Joy Ltd.
(1) Shareholders' funds:		
(a) Equity share capital of ₹10 each	₹	₹
(b) Reserves and surplus	4,00,000	1,50,000
General reserve		
Surplus	2,10,000	13,000
(2) Current liabilities	1,50,000	80,000
Trade payables		
	40,000	59,450
TOTAL	8,00,000	3,02,450
	₹	₹

II. ASSETS

(1) Non-current assets		
Fixed assets		
Investments (in shares of Joy Ltd.)	3,96,000	1,45,000
(2) Current assets	1,80,000	-
(a) Inventories	1,02,000	62,050
(b) Trade receivables	97,000	82,200
(c) Cash and bank	25,000	13,200
TOTAL	8,00,000	3,02,450

Following additional information is also given:

- Happy Ltd. acquired shares of Joy Ltd. on 1st April, 2022 when Joy Ltd. had surplus of ₹66,000 and general reserve of ₹9,000.
- Trade payables of Happy Ltd. included a sum of ₹24,000 payable to Joy Ltd. for purchases made from Joy Ltd. on which it charged a profit of ₹6,000.
- Joy Ltd. declared and paid interim dividend @ 8% on 2nd June, 2022.
- Inventories of ₹1,02,000 of Happy Ltd. included unsold goods purchased from Joy Ltd. at a cost of ₹18,000.

[June 2016 (8 Marks)]

Ans.

Percentage of shares held in subsidiary is not given hence it is assumed that 100% capital is held by holding company in subsidiary.

EQUITY & LIABILITIES	₹	₹
Shareholders Funds		
Equity Share Capital (Happy Ltd.)		4,00,000
General reserve (Happy Ltd.)		2,10,000
Adjusted Profit & Loss A/c (Happy Ltd.)		1,63,500
Capital reserve		45,000
Current Liabilities		
Trade payables		
- Happy Ltd.	40,000	
- Joy Ltd.	59,450	
(-) Mutual debt	(24,000)	75,450
		8,93,950

ASSETS		₹	₹
Non-Current Assets			
Fixed Assets			
- Happy Ltd.		3,96,000	5,41,000
- Joy Ltd.		1,45,000	
Current Assets			
Inventories			
- Happy Ltd.		1,02,000	1,59,550
- Joy Ltd.		62,050	
(-) Stock reserve		(4,500)	
Trade receivables			
- Happy Ltd.		97,000	1,55,200
- Joy Ltd.		82,200	
(-) Mutual debt		(24,000)	
Cash & bank			
- Happy Ltd.		25,000	38,200
- Joy Ltd.		13,200	
			8,93,950

Working Notes:

Dr.		General Reserve A/c (Joy Ltd.)		Cr.	
		By Balance b/d [Bal. Fig.]			9,000
To Balance c/d	13,000	By Profit & Loss A/c			4,000
	13,000				13,000

Dr.		Profit & Loss A/c (Joy Ltd.)		Cr.	
To General Reserve A/c	4,000	By Balance b/d			66,000
To Interim dividend	12,000	By Profit during year			30,000
To Balance c/d	80,000				
	96,000				96,000

Analysis of profits of S Ltd.:

Particulars	H Ltd. 100%	Minority 0%	Total 100%
Pre-acquisition/Capital Profit:			
Opening general reserve	9,000	-	9,000
Opening P & L balance	66,000	-	66,000
	75,000	-	75,000
Post-acquisition/Revenue Profit:			
Interim dividend [Note 1]	(12,000)	-	(12,000)
Profit during the year	30,000	-	30,000
	18,000	-	18,000

Minority Interest	
Share Capital	₹ Nil
Share of profits	
- Pre-acquisition	Nil
- Post-acquisition	Nil
	Nil

Cost of Control	
Cost of Investment	1,80,000
(-) Face value of shares	(1,50,000)
(-) Pre-acquisition profits	(75,000)
Capital reserve	(45,000)

Dr. Adjusted Profit & Loss A/c (Happy Ltd.)		Cr.	
To Stock Reserve (18,000 × 25%) [Note 2]	4,500	By Balance b/d	1,50,000
To Balance c/d	1,63,500	By Share in profit of subsidiary	18,000
	1,68,000		1,68,000

Calculation of profit % for stock reserve:

$$\frac{\text{Profit}}{\text{Sale price}} \times 100 = \frac{6,000}{24,000} \times 100 = 25\%$$

Note 1: Since interim dividend has been paid by subsidiary after it became subsidiary, entire interim dividend will be deducted from post-acquisition profit.

Note 2: Cost of purchase of Happy Ltd. is sale price of Joy Ltd. hence profit percentage has to be taken 25%.

Problem No. 7] From the following balance sheets of a holding company (H Ltd.) and its subsidiary (S Ltd.) on 31.3.2022, prepare a consolidated balance sheet:

Liabilities	H Ltd. ₹	S Ltd. ₹	Assets	H Ltd. ₹	S Ltd. ₹
Share Capital (₹ 10)	5,00,000	2,00,000	Goodwill	30,000	10,000
General Reserve	80,000	60,000	Machinery	3,00,000	1,50,000
Profit & Loss A/c	90,000	70,000	Stock	80,000	50,000
Sundry creditors	50,000	40,000	Debtors	1,20,000	1,60,000
Outstanding Expenses	20,000	10,000	Cash at bank	20,000	10,000
			Investments:		
			16,000 shares in S Ltd.	1,90,000	-
Total	7,40,000	3,80,000	Total	7,40,000	3,80,000

When control was acquired, S Ltd. had ₹40,000 in general reserve and ₹30,000 in profit and loss account. Immediately on purchase of shares, H Ltd. received ₹16,000 as dividend from S Ltd. which was credited to profit and loss account. Debtors of H Ltd. include ₹20,000 due from S Ltd. whereas creditors S Ltd. include ₹15,000 due to H Ltd. the difference being accounted for by a cheque-in-transit.

[June 2017 (8 Marks)]

Ans.

Control Ratio:

$$\frac{\text{No. of shares held by holding}}{\text{Total shares of subsidiary}} \times 100 = \frac{16,000}{20,000} \times 100 = 80\%$$

Consolidated Balance Sheet of H Ltd. & S Ltd.
As on 31st March, 2022

EQUITY & LIABILITIES		₹	₹
Shareholder's Funds			
Equity Share Capital (H Ltd.)			5,00,000
General Reserve (H Ltd.)			80,000
Adjusted P & L Balance (H Ltd.)			1,38,000
Minority Interest			66,000
Current Liabilities			
Sundry creditors			
- H Ltd.	50,000		
- S Ltd.	40,000		
(-) Mutual debt	(15,000)		
(-) Cheque in transit	(5,000)		70,000
Outstanding expenses			
- H Ltd.	20,000		
- S Ltd.	10,000		30,000
			8,84,000
ASSETS			
Non-Current Assets			
Goodwill			
- H Ltd.	30,000		
- S Ltd.	10,000		
(-) Capital Reserve	(26,000)		14,000
Machinery			
- H Ltd.	3,00,000		
- S Ltd.	1,50,000		4,50,000
Current Assets			
Stock			
- H Ltd.	80,000		
- S Ltd.	50,000		1,30,000
Debtors			
- H Ltd.	1,20,000		
- S Ltd.	1,60,000		
(-) Mutual debt	(15,000)		
(-) Cheque in transit	(5,000)		2,60,000
Cash at bank			
- H Ltd.	20,000		
- S Ltd.	10,000		30,000
			8,84,000

Analysis of profits of S Ltd.:

Particulars	H Ltd. 80%	Minority 20%	Total 100%
Pre-acquisition/Capital Profit:			
Opening General Reserve	32,000	8,000	40,000
Opening Profit & Loss A/c	24,000	6,000	30,000
Dividend	(16,000)	(4,000)	(20,000)
	40,000	10,000	50,000
Post-acquisition/Revenue Profit:			
Profit after acquisition	64,000	16,000	80,000
	64,000	16,000	80,000

Minority Interest	₹
Share Capital	40,000
Share of profits	
- Pre-acquisition	10,000
- Post-acquisition	16,000
	66,000

Cost of Control	₹
Cost of Investment	1,90,000
(-) Face value of shares	(1,60,000)
(-) Pre-acquisition profits	(40,000)
(-) Pre-acquisition dividend	(16,000)
Goodwill/(Capital Reserve)	(26,000)

Dr. General Reserve A/c (S Ltd.) Cr.

To Balance c/d	60,000	By Balance b/d	40,000
	60,000	By Profit & Loss A/c	20,000
			60,000

Dr. Profit & Loss A/c (S Ltd.) Cr.

To Dividend	20,000	By Balance b/d	30,000
To General Reserve A/c	20,000	By Profit after acquisition	80,000
To Balance c/d	70,000		
	1,10,000		1,10,000

Dr. Adjusted Profit & Loss A/c (H Ltd.) Cr.

To Pre-acquisition dividend	16,000	By Balance b/d	90,000
To Balance c/d	1,38,000	By Share in profits of subsidiary	64,000
	1,54,000		1,54,000

Dividend received by H Ltd. = 16,000

H Ltd. holds 80% shares in S Ltd.

Hence, dividend declared by S Ltd. = $16,000 \times 100/80 = 20,000$.

Problem No. 8] The Balance Sheets of H Ltd. and S Ltd. as on 31st March, 2018 are given below:

	H Ltd. (₹)	S Ltd. (₹)
I. EQUITY AND LIABILITIES		
(1) Shareholders Funds:		
(a) Share Capital:		
Equity Shares of ₹100 each fully paid-up	2,500	800
(b) Reserves and Surplus:		
General Reserve	600	250
Profits	300	200
(2) Current Liabilities:		
Trade Payables	450	330
Total	3,850	1,580
II. ASSETS		
(1) Non-Current Assets:		
(a) Tangible Assets:		
Land and Building	1,670	720
Plant and Machinery	440	289
(b) Long-term Investment (6,00,000 Shares in S Ltd.)	980	—
(2) Current Assets		
	760	571
Total	3,850	1,580

H Ltd. acquired the shares in S Ltd. on 31st March, 2017. On that date General Reserve and Profits of S Ltd. stood at ₹ 50 Lakh and ₹ 120 Lakh respectively.

Land and Building (Book Value ₹ 800 Lakh) and Plant and Machinery (Book Value ₹ 340 Lakh) of S Ltd. were revalued at ₹ 980 Lakh and ₹ 310 Lakh respectively, book value of remaining assets were unchanged.

You are required to prepare Consolidated Balance Sheet by ignoring Note to Accounts.

[Dec. 2018 (7 Marks)]

Ans.

Control Ratio:

$$\frac{\text{No. of shares held by holding}}{\text{Total shares of subsidiary}} \times 100 = \frac{6 \text{ lakh}}{8 \text{ lakh}} \times 100 = 75\%$$

Consolidated Balance Sheet of H Ltd. & S Ltd.

EQUITY & LIABILITIES		₹	₹
Shareholder's Funds			
Equity Share Capital (H Ltd.)			2,500
General Reserve (H Ltd.)			600
Adjusted P & L Balance (H Ltd.)			424.875
Minority Interest			346.625
Current Liabilities			
Trade Payables			
- H Ltd.	450		
- S Ltd.	330		780
			4,651.5
ASSETS		₹	₹
Non-Current Assets			
Goodwill			65
Land & building			
- H Ltd.			
- S Ltd.	1,670		
(+) Revaluation profit	720		
(-) Depreciation on increased value	180		
Plant & Machinery	(18)		2,552
- H Ltd.			
- S Ltd.	440		
(-) Revaluation Loss	289		
(+) Depreciation on decreased value	(30)		
	4.5		703.5
Current Assets			
- H Ltd.			
- S Ltd.	760		
	571		1,331
			4,651.5

Analysis of profits of S Ltd.:

Particulars	H Ltd. 75%	Minority 25%	Total 100%
Pre-acquisition/Capital Profit:			
Revaluation Profit on Land & Building	135	45	180
Revaluation Loss on Plant & Machinery	(22.5)	(7.5)	(30)

Particulars	H Ltd. 75%	Minority 25%	Total 100%
Opening General Reserve	112.5	37.5	150
Opening P & L balance	(90)	30	120
	315	105	420
Post-acquisition/Revenue Profit:			
Depreciation on increased value	(13.5)	(4.5)	(18)
Depreciation on decreased value	3.375	1.125	4.5
Profit during the year	135	45	180
	124.875	41.625	166.5

Minority Interest	₹	Cost of Control	₹
Share Capital	200	Cost of investment	980
Share of profits		(-) Face value of shares	(600)
- Pre-acquisition	105	(-) Pre-acquisition profit	(315)
- Post-acquisition	41.625		
	346.625	Goodwill/(Capital Reserve)	65

Dr. General Reserve A/c (S Ltd.) Cr.

To Balance c/d	250	By Balance b/d	150
	250		100
			250

Dr. Profit & Loss A/c (S Ltd.) Cr.

To Balance c/d	100	By Balance b/d	120
	200	By Profit after acquisition	180
	300		300

Dr. Adjusted Profit & Loss A/c (H Ltd.) Cr.

To Balance c/d	424.875	By Balance b/d	300
	424.875	By Share in profits of subsidiary	124.875
			424.875

Rate of depreciation is calculated as follows:

- Balance sheet value of Land & Building is ₹ 720 lakh, whereas book value at the beginning of the year was ₹ 800 lakh. Thus, depreciation of ₹ 80 lakh has been provided.
- Balance sheet value of Plant & Machinery is ₹ 289 lakh, whereas book value at the beginning of the year was ₹ 340 lakh. Thus, depreciation of ₹ 51 lakh has been provided.

$$\text{Land \& building} = \frac{80}{800} \times 100 = 10\%$$

$$\text{Furniture} = \frac{51}{340} \times 100 = 15\%$$

Problem No. 9] Beta Ltd. is a subsidiary of Alpha Ltd. Following is the Balance Sheet of Beta Limited as at 31st March, 2019:

Particulars	(₹ in lakh)
EQUITY AND LIABILITIES	
1. Shareholders Funds	
(a) Share Capital: Equity Shares of ₹10 each	300
(b) Reserves and Surplus (Statement of Profit and Loss)	250
2. Non-current Liabilities: 8% Debentures	200
3. Current Liabilities	160
Total Equity and Liabilities	910
ASSETS	
1. Non-Current Assets:	
Tangible Assets:	
Land and Building	270
Plant and Machinery	350
2. Current Assets	
Total Assets	910

On 1st April, 2018, Alpha Ltd. acquired 24 lakh equity shares of Beta Ltd. at a cost of ₹ 460 lakh. On that date, Statement of Profit and Loss of Beta Ltd. showed a credit balance of ₹ 180 lakh and Land & Building was revalued by Alpha Ltd., at 20% above book value of ₹ 300 lakh (but no such adjustments are shown in the books of Beta Ltd.).

You are required to calculate:

- (1) Cost of Control
- (2) Minority Interest.

[June 2019 (5 Marks)]

Ans.

Control Ratio:

$$\frac{\text{No. of shares held by holding}}{\text{Total shares of subsidiary}} \times 100 = \frac{24 \text{ lakh}}{30 \text{ lakh}} \times 100 = 80\%$$

Analysis of profits of Beta Ltd.:

Particulars	Alpha Ltd. 80%	Minority 20%	Total 100%
Pre-acquisition/Capital Profit:			
Opening Profit & Loss A/c	144	36	180
Revaluation profit on Land & Building	48	12	60
	192	48	240
Post-acquisition/Revenue Profit:			
Profit during the year	56	14	70
Depreciation on increased value of Land & Building	(4.8)	(1.2)	(6)
	51.2	12.8	64

Minority Interest	₹
Share Capital	60
Share of profits	
- Pre-acquisition	48
- Post-acquisition	12.8
	120.8

Cost of Control	₹
Cost of investment	460
(-) Face value of shares	(240)
(-) Pre-acquisition profit	(192)
	28
Goodwill	

Dr. Profit & Loss A/c (Beta Ltd.) Cr.

To Balance c/d	250	By Balance b/d	180
	250	By Profit during the year	70
			250

Balance on 1.4.2018	300
Depreciation for 2018-2019 [Bal. Fig.]	(30)
Balance on 31.3.2019	270

$$\text{Rate of depreciation} = \frac{30}{300} \times 100 = 10\%$$

Problem No. 10] From the following Balance Sheets of Viva Ltd. and Jiyu Ltd., prepare the Consolidated Balance Sheet in the books of Viva Ltd. Viva Ltd. acquired the shares of Jiyu Ltd. as on 1st October, 2018. Balance Sheet as at 31st March, 2019:

Particulars	Amount (₹)	
	Viva Ltd.	Jiyu Ltd.
Share Capital	30,00,000	6,00,000
General Reserve	4,00,000	—
Profit and Loss account	6,00,000	2,10,000
Sundry creditors	5,00,000	1,90,000
Land and Building	24,00,000	4,00,000
Plant and Machinery	4,00,000	4,00,000
Current Assets	11,60,000	2,00,000
Investments	5,40,000	—

(5,400 shares of ₹100 each of Jiyu Ltd.)

The profit and loss account of Jiyu Ltd. had a credit balance of ₹ 90,000 on 1st April, 2018.

[June 2019 (5 Marks)]

Ans.

Control Ratio:

$$\frac{\text{No. of shares held by holding}}{\text{Total shares of subsidiary}} \times 100 = \frac{5,400}{6,000} \times 100 = 90\%$$

Consolidated Balance Sheet of Viva Ltd. & Jiyu Ltd.

EQUITY & LIABILITIES	₹	₹
Shareholder's Funds		
Equity Share Capital (Viva Ltd.)		30,00,000
General Reserve (Viva Ltd.)		4,00,000
Adjusted P & L Balance (Viva Ltd.)		6,54,000
Capital Reserve		1,35,000
Minority Interest		81,000
Current Liabilities		
Sundry creditors		
- Viva Ltd.	5,00,000	
- Jiyu Ltd.	1,90,000	6,90,000
		49,60,000
ASSETS	₹	₹
Non-Current Assets		
Land and Building		
- Viva Ltd.	24,00,000	
- Jiyu Ltd.	4,00,000	28,00,000

Plant and Machinery	4,00,000	8,00,000
- Viva Ltd.	4,00,000	
- Jiyu Ltd.		
Current Assets	11,60,000	13,60,000
- Viva Ltd.	2,00,000	
- Jiyu Ltd.		
		49,60,000

Analysis of profits of Jiyu Ltd.:

Particulars	Viva Ltd. 90%	Minority 10%	Total 100%
Pre-acquisition/Capital Profit:			
Opening Profit & Loss A/c	81,000	9,000	90,000
Profit during the year (1,20,000 × 6/12)	54,000	6,000	60,000
	1,35,000	15,000	1,50,000
Post-acquisition/Revenue Profit:			
Profit during the year (1,20,000 × 6/12)	54,000	6,000	60,000
	54,000	6,000	60,000

Minority Interest	₹
Share Capital	60,000
<i>Share of profits</i>	
- Pre-acquisition	15,000
- Post-acquisition	6,000
	81,000

Cost of Control	₹
Cost of investment	5,40,000
(-) Face value of shares	(5,40,000)
(-) Pre-acquisition profit	(1,35,000)
	(1,35,000)
Capital Reserve	

Dr.

Profit & Loss A/c (Jiyu Ltd.)

To Balance c/d	2,10,000	By Balance b/d	90,000
	2,10,000	By Profit during the year	1,20,000
			2,10,000

Adjusted Profit & Loss A/c (Viva Ltd.)

Dr.		Cr.	
To Balance c/d	6,54,000	By Balance b/d	6,00,000
		By Share in profits of subsidiary	54,000
	6,54,000		6,54,000

Problem No. 11] Following are the Balance Sheets of H Ltd. and its subsidiary S Ltd. at 31st March, 2018:

PARTICULARS

	H Ltd. (₹)	S Ltd. (₹)
I. EQUITY AND LIABILITIES		
(1) Shareholders Funds:		
(a) Share Capital (equity shares of ₹10 each)	5,00,000	2,00,000
(b) Reserves and Surplus	1,00,000	50,000
(2) Current Liabilities:		
Trade Payables		
Total	<u>80,000</u>	<u>60,000</u>
II. ASSETS		
(1) Non-Current Assets:		
(a) Fixed Assets - Tangible	3,00,000	1,00,000
(b) Non-current investment	1,80,000	-
(12,000 equity shares in S Ltd. acquired on 31 st March, 2018 at cost)		
(2) Current Assets		
Total	<u>2,00,000</u>	<u>2,10,000</u>
	<u>6,80,000</u>	<u>3,10,000</u>

On 31st March, 2018 S Ltd. revalued its fixed assets at ₹ 1,50,000 and current assets of ₹ 1,60,000. Trade payables of H Ltd. include ₹ 20,000 due to S Ltd.

Prepare the consolidated Balance Sheet of H Ltd. and its subsidiary S Ltd. as on 31st March, 2018 with Notes to Accounts and working notes.

[June 2019 (7 Marks)] (Old)

Ans.

Control Ratio:

$$\frac{\text{No. of shares held by holding}}{\text{Total shares of subsidiary}} \times 100 = \frac{12,000}{20,000} \times 100 = 60\%$$

Consolidated Balance Sheet of H Ltd. & S Ltd.

EQUITY & LIABILITIES	₹	₹
Shareholder's Funds		
Equity Share Capital (H Ltd.)		5,00,000
Adjusted Reserves & Surplus (H Ltd.)		70,000

EQUITY & LIABILITIES		₹	₹
Minority Interest			1,00,000
Trade Payables	80,000		
- H Ltd.	60,000		
- S Ltd.	(20,000)		1,20,000
(-) Mutual debt			7,90,000
ASSETS		₹	₹
Non-Current Assets			
Fixed Assets – Tangible	3,00,000		
- H Ltd.	1,00,000		
- S Ltd.	50,000		4,50,000
(+) Revaluation profit			
Current Assets			
- H Ltd.	2,00,000		
- S Ltd.	2,10,000		
(-) Revaluation loss	(50,000)		
(-) Mutual debt	(20,000)		3,40,000
			7,90,000

Analysis of profits of S Ltd.:

Particulars	H Ltd. 60%	Minority 40%	Total 100%
Pre-acquisition/Capital Profit:			
Revaluation profit on fixed assets	30,000	20,000	50,000
Profit before acquisition	30,000	20,000	50,000
	60,000	40,000	1,00,000
Post-acquisition/Revenue Profit:			
Revaluation loss on current assets	(30,000)	(20,000)	(50,000)
	(30,000)	(20,000)	(50,000)

Minority Interest	₹	Cost of Control	₹
Share Capital	80,000	Cost of investment	1,80,000
Share of profits		(-) Face value of shares	(1,20,000)
- Pre-acquisition	40,000	(-) Pre-acquisition profit	(60,000)
- Post-acquisition	(20,000)		
	1,00,000	Goodwill/(Capital Reserve)	Nil

Dr.		Profit & Loss A/c (S Ltd.)		Cr.	
To Balance c/d	50,000	By Profit before acquisition [Bal. Fig.]	50,000		
	50,000				
					50,000
Dr.		Adjusted Reserves & Surplus A/c (H Ltd.)		Cr.	
To Share of loss in subsidiary	30,000	By Balance b/d	1,00,000		
To Balance c/d	70,000				
	1,00,000				
					1,00,000

Problem No. 12] From the Balance Sheet and additional information given below, prepare consolidated Balance Sheet of H Ltd. (Holding Company).

Balance Sheets of H Ltd. and S Ltd.

As on 31st March, 2019

Particulars	H Ltd. (₹)	S Ltd. (₹)
I. EQUITY AND LIABILITIES		
(1) Shareholders Funds		
(a) Share Capital	5,00,000	2,00,000
(Equity shares of ₹100 each)		
(b) Reserves and Surplus:		
General Reserve	60,000	40,000
Profit and Loss Account	30,000	10,000
(2) Non-Current Liabilities		
(a) 12% Debentures of ₹100 each (secured)	—	1,00,000
(3) Current Liabilities		
(a) Trade Payables:		
Creditors	40,000	25,000
Bills Payable	12,000	8,000
(b) Short-term provisions	40,000	20,000
Total	6,82,000	4,03,000
II. ASSETS		
(1) Non-Current Assets		
(a) Fixed Assets — Tangible		
Plant and Machinery	3,50,000	3,20,000

Particulars	H Ltd.	S Ltd.
(b) Non-current Investments:	1,80,000	—
Shares in S Ltd. (1,500 shares @ ₹ 120 each)	36,000	—
12% Debentures (400 debentures in S Ltd. @ ₹ 90 each)		
(2) Current Assets	35,000	15,000
(a) Inventories — Stock		
(b) Trade Receivables:	60,000	30,000
Debtors	10,000	8,000
Bills Receivables		
(c) Cash and Cash Equivalents	11,000	30,000
Cash in hand		
Total	6,82,000	4,03,000

Additional Information:

- (a) When H Ltd. acquired the shares of S Ltd., the General Reserve and Profit & Loss Account of S Ltd. showed a balance of ₹ 30,000 and ₹ 4,000 (Dr.) respectively.
- (b) Creditors of S Ltd. include ₹ 10,000 for goods supplied by H Ltd. at a profit of 20% on sales. Half of the goods were still in stock on 31st March, 2019.
- (c) The Bills accepted by H Ltd. were all in the favour of S Ltd.
- (d) Plant and Machinery were overvalued by ₹ 20,000. [Dec. 2019 (8 Marks)]

Ans.**Control Ratio:**

$$\frac{\text{No. of shares held by holding}}{\text{Total shares of subsidiary}} \times 100 = \frac{1,500}{2,000} \times 100 = 75\%$$

Consolidated Balance Sheet of H Ltd. & S Ltd.

EQUITY & LIABILITIES	₹	₹
Shareholder's Funds		
Equity Share Capital (H Ltd.)		5,00,000
General Reserve (H Ltd.)		60,000
Adjusted P & L Balance (H Ltd.)		47,000
Minority Interest		
- In shares	57,500	
- In debentures	60,000	1,17,500
Current Liabilities		
Creditors		

- H Ltd.	40,000	
- S Ltd.	25,000	
(-) Mutual debt	(10,000)	55,000
Bills Payable		
- H Ltd.	12,000	
- S Ltd.	8,000	
(-) Mutual debt	(8,000)	12,000
Short-term provisions		
- H Ltd.	40,000	
- S Ltd.	20,000	60,000
		8,51,500
ASSETS	₹	₹
Non-Current Assets		
Goodwill		21,500
Plant and Machinery		
- H Ltd.	3,50,000	
- S Ltd.	3,20,000	
(-) Revaluation loss	(20,000)	6,50,000
Current Assets		
Inventories — Stock		
- H Ltd.	35,000	
- S Ltd.	15,000	
(-) Stock Reserve (10,000 × ½ × 20%)	(1,000)	49,000
Debtors		
- H Ltd.	60,000	
- S Ltd.	30,000	
(-) Mutual debt	(10,000)	80,000
Bills Receivable		
- H Ltd.	10,000	
- S Ltd.	8,000	
(-) Mutual debt	(8,000)	10,000
Cash and Cash Equivalents		
- H Ltd.	11,000	
- S Ltd.	30,000	41,000
		8,51,500

Analysis of profits of S Ltd.:

Particulars	H Ltd. 75%	Minority 25%	Total 100%
Pre-acquisition/Capital Profit:			
Revaluation loss on Plant & Machinery	(15,000)	(5,000)	(20,000)
Opening general reserve	22,500	7,500	30,000
Opening P & L balance	(3,000)	(1,000)	(4,000)
	4,500	1,500	6,000
Post-acquisition/Revenue Profit:			
Profit after acquisition	18,000	6,000	24,000
	18,000	6,000	24,000

Minority Interest	Shares	Debentures
Share Capital	50,000	60,000
<i>Share of profits</i>		
- Pre-acquisition	1,500	-
- Post-acquisition	6,000	-
	57,500	60,000

Cost of Control		
Cost of investment		
- In shares		1,80,000
- In debentures		36,000
(-) Face value of shares	(1,50,000)	
(-) Face value of debentures	(40,000)	
(-) Pre-acquisition profit	(4,500)	
Goodwill		21,500

Dr. General Reserve A/c (S Ltd.) Cr.

To Balance c/d	40,000	By Balance b/d	30,000
	40,000	By Profit & Loss A/c [Bal. Fig.]	10,000
			40,000

Dr. Profit & Loss A/c (S Ltd.) Cr.

To Balance b/d [Loss]	4,000	By Profit after acquisition	24,000
To General Reserve A/c	10,000	[Bal. Fig.]	
To Balance c/d	10,000		
	24,000		24,000

Dr. Adjusted Profit & Loss A/c (H Ltd.) Cr.

To Stock Reserve	1,000	By Balance b/d	30,000
To Balance c/d	47,000	By Share in profits of subsidiary	18,000
	48,000		48,000

Problem No. 13] The Balance Sheet of H Ltd. and S Ltd. as on 31.03.2020 were as follows:

Balance Sheets of H Ltd. and S Ltd.
As at 31st March, 2020

Particulars	H Ltd. (₹)	S Ltd. (₹)
I. EQUITY AND LIABILITIES		
(1) Shareholders Funds		
(a) Share Capital		
Equity share of ₹100 each	6,00,000	2,50,000
(b) Reserves and Surplus		
General Reserve	1,00,000	60,000
Profit & Loss Account	1,50,000	90,000
(2) Current Liabilities		
(a) Trade Payables – Creditors		
	70,000	60,000
(b) Other Current Liabilities		
Income-tax	60,000	70,000
Total	<u>9,80,000</u>	<u>5,30,000</u>
II. ASSETS		
(1) Non-Current Assets:		
(a) Fixed Assets		
(i) Tangible Assets:		
Machinery	1,50,000	1,08,000
Vehicle	1,30,000	50,000
Furniture	50,000	30,000
(ii) Intangible Assets – Goodwill		
	60,000	40,000
(b) Non-current Investment		
2,000 Equity Shares in S Ltd. (at cost)	3,80,000	—
(2) Current Assets:		
(a) Inventories – Stock		
	70,000	1,40,000
(b) Trade Receivables – Debtors		
	60,000	1,00,000
(c) Cash and Cash Equivalents – Bank		
	80,000	62,000
Total	<u>9,80,000</u>	<u>5,30,000</u>

Additional Information:

- (i) H Ltd. acquired 2,000 equity shares of S Ltd. on 1.4.2019.
- (ii) The Profit and Loss Account of S Ltd. had a credit balance of ₹ 30,000 and that of General Reserve ₹ 50,000 on the date of acquisition.

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- (iii) On 01.06.2019 S Ltd. declared a dividend out of its pre-acquisition profits @ 12% on its share capital. H Ltd. credited the same to its Profit and Loss Account.
- (iv) S Ltd. owned ₹ 20,000 for purchase of stock from H Ltd. The entire stock is held on 31.03.2020. H Ltd. made profit of 25% on cost.
- (v) Machinery standing in the books of S Ltd. at ₹ 1,20,000 on the date of acquisition of shares, were re-valued at ₹ 1,44,000.

Prepare a consolidated Balance Sheet of H Ltd. and S Ltd. on 31.03.2020.

[June 2021 (8 Marks)]

Ans.

Control Ratio:

$$\frac{\text{No. of shares held by holding}}{\text{Total shares of subsidiary}} \times 100 = \frac{2,000}{2,500} \times 100 = 80\%$$

Consolidated Balance Sheet of H Ltd. & S Ltd.

EQUITY & LIABILITIES	₹	₹
Shareholder's Funds		
Equity Share Capital (H Ltd.)		6,00,000
General Reserve (H Ltd.)		1,00,000
Adjusted P & L Balance (H Ltd.)		2,00,000
Minority Interest		84,320
Current Liabilities		
Trade Payables – Creditors		
- H Ltd.	70,000	
- S Ltd.	60,000	1,30,000
Other Current Liabilities – Income-tax		
- H Ltd.	60,000	
- S Ltd.	70,000	1,30,000
		12,44,000
ASSETS	₹	₹
Non-Current Assets		
<i>Intangible Assets:</i>		
Goodwill		
- H Ltd.	60,000	
- S Ltd.	40,000	
- Goodwill on consolidation	96,800	1,96,800

ASSETS		₹	₹
Tangible Assets:			
Machinery			
- H Ltd.		1,50,000	
- S Ltd.		1,08,000	
(+) Revaluation profit		24,000	
(-) Depreciation on increased value (24,000 × 10%)		(2,400)	2,79,600
Vehicle			
- H Ltd.		1,30,000	
- S Ltd.		50,000	1,80,000
Furniture			
- H Ltd.		50,000	
- S Ltd.		30,000	80,000
Current Assets			
Inventories – Stock			
- H Ltd.		70,000	
- S Ltd.		1,40,000	
(-) Stock Reserve [20,000 × 20%]		(4,000)	2,06,000
Trade Receivables – Debtors			
- H Ltd.		60,000	
- S Ltd.		1,00,000	1,60,000
Cash and Cash Equivalents – Bank			
- H Ltd.		80,000	
- S Ltd.		62,000	1,42,000
			12,44,000

Analysis of profits of S Ltd.:

Particulars	H Ltd. 80%	Minority 20%	Total 100%
Pre-acquisition/Capital Profit:			
Revaluation profit on machinery	19,200	4,800	24,000
Opening General Reserve	40,000	10,000	50,000
Opening Profit & Loss	24,000	6,000	30,000
Dividend	(24,000)	(6,000)	(30,000)
	59,200	14,800	74,000

Particulars	H Ltd. 80%	Minority 20%	Total 100%
Post-acquisition/Revenue Profit:			
Depreciation on increased value of machinery	(1,920)	(480)	(2,400)
Profit during the year [Note 3]	80,000	20,000	1,00,000
	78,080	19,520	97,600

Minority Interest	₹	Cost of Control	₹
Share Capital	50,000	Cost of investment	3,80,000
Share of profits		(-) Face value of shares	(2,00,000)
- Pre-acquisition	14,800	(-) Pre-acquisition dividend	(24,000)
- Post-acquisition	19,520	(-) Pre-acquisition profit	(59,200)
	84,320	Goodwill	96,800

Dr. General Reserve A/c (S Ltd.) Cr.

To Balance c/d	60,000	By Balance b/d	50,000
	60,000	By Profit & Loss A/c	10,000
			60,000

Dr. Profit & Loss A/c (S Ltd.) Cr.

To Dividend (2,50,000 × 12%)	30,000	By Balance b/d	30,000
To General Reserve A/c	10,000	By Profit during the year	1,00,000
To Balance c/d	90,000	[Bal. Fig.]	
	1,30,000		1,30,000

Dr. Adjusted Profit & Loss A/c (H Ltd.) Cr.

To Pre-acquisition dividend [30,000 × 80%]	24,000	By Balance b/d	1,50,000
To Stock Reserve	4,000	By Share in profits of subsidiary	78,080
To Balance c/d	2,00,080		
	2,28,080		2,28,080

Note 1: Calculation of profit % for stock reserve:

In problem profit percentage on cost is given, but we have to take profit percentage on sales, which is calculated as below:

$$\text{Cost} + \text{Profit} = \text{Sales} \quad \frac{25}{125} \times 100 = 20\%$$

$$100 + 25 = 125$$

Note 2:

Balance on 1.4.2019	1,20,000
Depreciation for 2019-2020 (Bal. Fig.)	(12,000)
Balance on 31.3.2020	<u>1,08,000</u>

$$\text{Rate of depreciation} = \frac{12,000}{1,20,000} \times 100 = 10\%$$

Note 3:

Since H Ltd. acquired shares at the first date of the financial year, entire profit earned by the S Ltd. during the year will be treated as post-acquisition profit.

Problem No. 14] Shiva Ltd. purchased 4,000 equity shares of Chandu Ltd. on 1st October, 2018. From the following information of Chandu Ltd., calculate minority shareholder's interest:

	31 st March, 2018	31 st March, 2019
5,000 equity shares of ₹100 each	5,00,000	5,00,000
General Reserve	20,000	20,000
Profit and Loss A/c	5,000	35,000
Discount on issue of debentures	10,000	10,000

On 1st April, 2018 Land & Building and Plant & Machinery of Chandu Ltd. were ₹ 2,00,000 and ₹ 5,00,000 respectively. On the date of acquisition Shiva Ltd. revalued Land & Building at ₹ 2,20,000 and Plant & Machinery at ₹ 4,55,000.

[Dec. 2021 (5 Marks)]

Ans.

Control Ratio:

$$\frac{\text{No. of shares held by holding}}{\text{Total shares of subsidiary}} \times 100 = \frac{4,000}{5,000} \times 100 = 80\%$$

Dr. General Reserve A/c Cr.

To Balance c/d		By Balance b/d	20,000
	20,000		
	20,000		20,000

Dr. Profit & Loss A/c Cr.

To Balance c/d		By Balance b/d	5,000
	35,000	By Profit during the year	30,000
	35,000		35,000

Analysis of profits of S Ltd.:

Particulars	Shiva Ltd. 80%	Minority 20%	Total 100%
Pre-acquisition/Capital Profit:			
Discount on issue of debentures	(8,000)	(2,000)	(10,000)
Revaluation profit on Land & Building	16,000	4,000	20,000
Revaluation loss on Plant & Machinery	(36,000)	(9,000)	(45,000)
Opening General Reserve	16,000	4,000	20,000
Opening Profit & Loss	4,000	1,000	5,000
Profit during the year (30,000 × 6/12)	12,000	3,000	15,000
	4,000	1,000	5,000
Post-acquisition/Revenue Profit:			
Profit during the year (30,000 × 6/12)	12,000	3,000	15,000
	12,000	3,000	15,000

Minority Interest	₹
Share Capital	1,00,000
Share of profits	
- Pre-acquisition	1,000
- Post-acquisition	3,000
	1,04,000

ADVANCED PROBLEMS & SOLUTIONS

Problem No. 15] Orchid Ltd. holds 80% shares in its subsidiary Tulip Ltd. From the following information calculate minority interest at the end of each year:

- Share capital of Tulip Ltd. was ₹ 10,00,000 (₹ 10 each) and reserves ₹ 2,00,000 on the date of acquisition on 31st March, 2020.
- Fully paid bonus shares were issued by Tulip Ltd. on 31st March, 2021 in the ratio of 2 bonus shares for every 5 shares held.
- Profit and loss of Tulip Ltd. for the various years are:

	Profit/Loss (₹)
31st March, 2021	: 3,00,000
31st March, 2022	: (1,00,000) (loss)
31st March, 2023	: 2,00,000
31st March, 2024	: 2,50,000 (including profit of ₹ 50,000 on revaluation of assets)

[Dec. 2016 & June 2018 (5 Marks)]

Ans.

Share of minority for different years in profits:

Year ended	Cumulative profit at the end	Calculation of share	Share of minority
31.3.2021	$(2,00,000 + 3,00,000 - **4,00,000) = 1,00,000$		
31.3.2022	$(1,00,000 - 1,00,000) = 0$	$1,00,000 \times 20\%$	20,000
31.3.2023	$(0 + 2,00,000) = 2,00,000$	$0 \times 20\%$	Nil
31.3.2024	$(2,00,000 + 2,50,000) = 4,50,000$	$2,00,000 \times 20\%$	40,000
		$4,50,000 \times 20\%$	90,000

Bonus share capital = $10,00,000 \times 2/5 = **4,00,000$

Minority interest for different years:

Particulars	31.3.2021	31.3.2022	31.3.2023	31.3.2024
Share Capital	2,80,000	2,80,000	2,80,000	2,80,000
Share of profits (capital & revenue)	20,000	Nil	40,000	90,000
	3,00,000	2,80,000	3,20,000	3,70,000

Note: Capital held by minority = $10,00,000 + 4,00,000 \times 20\% = 2,80,000$.

Problem No. 16] Following are the profit & loss accounts of H Ltd. and S Ltd. for the year ended 31st March, 2022:

	H Ltd.	S Ltd.		H Ltd.	S Ltd.
To Opening Stock	1,00,000		- By Sales	8,00,000	6,50,000
To Purchases	5,00,000	4,00,000	By Closing Stock	1,50,000	1,00,000
To Productive Wages	1,50,000	1,00,000			
To Gross Profit c/d	2,00,000	2,50,000			
	<u>9,50,000</u>	<u>7,50,000</u>		<u>9,50,000</u>	<u>7,50,000</u>
To Sundry Expenses	75,000	1,00,000	By Gross Profit b/d	2,00,000	2,50,000
To Debenture Interest	-	6,000	By Debenture Interest	3,000	-
To Provision for Taxation	60,000	70,000			
To Net Profit c/d	68,000	74,000			
	<u>2,03,000</u>	<u>2,50,000</u>		<u>2,03,000</u>	<u>2,50,000</u>
To Preference Dividend	-	3,000	By Net Profit b/d	68,000	74,000
To Proposed Dividend	20,000	20,000			
To Tax on distributed profit @ 15%	3,000	3,450			
To Balance c/d	45,000	47,550			
	<u>68,000</u>	<u>74,000</u>		<u>68,000</u>	<u>74,000</u>

You are also given following additional information:

- (1) H Ltd. holds 1,500 equity shares of ₹ 100 each in S Ltd. whose capital consists of 2,000 equity shares of ₹ 100 each and 6% 500 cumulative preference shares

of ₹ 100 each. S Ltd. has also issued 6% debentures of ₹ 1,00,000 out of which H Ltd. holds ₹ 50,000.

- (2) The shares in S Ltd. were acquired by H Ltd. on 1st July 2021 but the debentures were acquired on 1st April 2021. S Ltd. was incorporated on 1st April, 2021.
- (3) During the year S Ltd. sold to H Ltd. goods costing ₹ 50,000 at the selling price of ₹ 75,000. One fourth of the goods manufactured remained unsold on 31st March, 2022. The goods were valued at cost to the holding company for closing stock purposes.

[Dec. 2017 (7 Marks)]

Ans.

Consolidated Profit & Loss A/c

Particulars	H Ltd.	S Ltd.	Adjus.	Total	Particulars	H Ltd.	S Ltd.	Adjus.	Total
To Opening Stock	1,00,000	-	-	1,00,000	By Sales	8,00,000	6,50,000	(75,000)	13,75,000
To Purchase	5,00,000	4,00,000	(75,000)	8,25,000	By Closing Stock	1,50,000	1,00,000	(6,250)	2,43,750
To Productive wages	1,50,000	1,00,000	-	2,50,000					
To Gross Profit c/d	2,00,000	2,50,000	(6,250)	4,43,750					
	9,50,000	7,50,000	(81,250)	16,18,750		9,50,000	7,50,000	(81,250)	16,18,750
To Sundry Expenses	75,000	1,00,000	-	1,75,000	By Gross Profit b/d	2,00,000	2,50,000	(6,250)	4,43,750
To Debenture Int.	-	6,000	(3,000)	3,000	By Debenture Int.	3,000	-	(3,000)	-
To Provision for tax	60,000	70,000	-	1,30,000					
To Profit c/d	68,000	74,000	(6,250)	1,35,750					
	2,03,000	2,50,000	(9,250)	4,43,750		2,03,000	2,50,000	(9,250)	4,43,750
To Prof. Dividend	-	3,000	-	3,000	By Profit b/d	68,000	74,000	(6,250)	1,35,750
To Proposed Dividend	20,000	20,000	(15,000)	25,000	By Proposed Dividend	15,000	-	(15,000)	-
To Tax on distributed profits	3,000	3,450	-	6,450	(20,000 × 75%)				
To Profit c/d	60,000	47,550	(6,250)	1,01,300					
	83,000	74,000	(21,250)	1,35,750		83,000	74,000	(21,250)	1,35,750
To Investment A/c					By Profit b/d	60,000	47,550	(6,250)	1,01,300
- Pre-acquisition dividend	3,750	-	-	3,750					
- Capital Profit	-	8,916	-	8,916					
To Minority Interest	-	11,888	(1,562)	10,326					
To Balance of to balance sheet	56,250	26,746	(4,688)	78,308					
	60,000	47,550	(6,250)	1,01,300		60,000	47,550	(6,250)	1,01,300

Stock reserve = $75,000 \times 1/4 \times 1/3 = 6,250$

Pre-acquisition dividend = Proposed dividend of ₹ 15,000 $\times 3/12 = 3,750$

Capital Profit (Profit for the period 1.4.2021 to 30.6.2021) = $47,550 \times 75\% \times 3/12 = 8,916$

Share of profit to Minority Interest = $47,550 \times 25\% = 1,188$

Stock reserve has been set-off as under:

- H Ltd. share = $6,250 \times 75\% = 4,688$ set-off against current year profit.

- Share of minority shareholder = $6,250 \times 25\% = 1,562$ set-off against minority interest.

FINANCIAL STATEMENT ANALYSIS

THEORETICAL QUESTIONS

Q. 1. Write a short note on: Interest Cover/Debt Service Ratio

[June 2001 (5 Marks)]

Ans.

$$\text{Interest Cover or Debt Service Ratio} = \frac{\text{EBIT}}{\text{Interest}}$$

The interest coverage ratio shows how many times interest charges are covered by funds that are available for payment of interest. An interest cover of 6 to 7 is considered reasonable by financial institutions. A very ratio indicates that the firm is conservative in using debt and a very low ratio indicates excessive use of debt.

Q. 2. Write short note on: Liquid Ratio/Quick Ratio/Acid Test Ratio

[Dec. 2001 (5 Marks)]

Ans.

$$\text{Liquid Ratio} = \frac{\text{Liquid Assets}}{\text{Current Liabilities}}$$

The ideal liquid ratio is taken as 1:1.

It is ascertained by comparing the liquid assets to current liabilities. Liquid assets would include cash in hand, cash at bank, sundry debtors excluding bad debts and readily marketable investments. *Prepaid expenses and stock are not taken as liquid assets.*

Liquid liabilities mean liabilities which are payable within a short period. The bank overdraft (if it continues to be a permanent mode of financing) and credit facilities will be excluded from current liabilities in such a case.

Q. 3. Write a short note on: Return on Investment (ROI) [June 2002 (5 Marks)]

Or

High return on investment (ROI) indicates efficient use of assets. Comment. [June 2015 (4 Marks)]

Ans. Return on Investment (ROI) ratio shows how much a company is earning on its investments i.e. capital employed. This ratio is considered to be one of the most important ratios because it reflects the overall efficiency with which capital/assets are used.

A high ratio indicates efficient use of assets and low ratio indicates ineffective use of assets. Return on investment is also an important measure of profitability and is useful for inter-firm comparison.

This ratio is calculated as under:

$$\text{Return on Investment} = \frac{\text{Operating profit (EBIT)}}{\text{Capital Employed}} \times 100$$

Q. 4. Explain any four advantages of ratio analysis. [Dec. 2002 (4 Marks)]

Ans. Following are the advantages attributed to the technique of ratio analysis:

- (1) **Simplifies financial statements:** Ratio analysis simplifies the comprehension of financial statement. Ratios tell the whole story of changes in the financial condition of the business.
- (2) **Analyze past and forecast future:** It helps to analyze and understand financial health and trend of a business, including past performance and makes it possible to forecast of future periods. They diagnose the financial health by evaluating liability, Solvency, profitability etc.
- (3) **Decision making and cost control:** It serves as a useful tool in management control process for decision making and cost control purposes.
- (4) **Role:** It plays a significant role in cost accounting, financial accounting, budgetary control and auditing.
- (5) **Summaries accounting figures:** It summaries the accounting figures in order to make them more understandable in lucid form. They highlight the inter-relationship which exists between various segments of the business expressed by accounting statements.
- (6) It helps in the identification, tracing and fixing of the responsibilities of managerial personnel at different levels.

Q. 5. What are the objectives of financial statement analysis? [Dec. 2008 (6 Marks)]

Ans. The relationship between two accounting figures is known as ratio. Ratio analysis is a process of comparison of one figure against another, which helps to make proper analysis about the strength and weaknesses of the firm's operations.

The calculations of ratios are a relatively easy and simple task but the proper analysis and interpretation of the ratios is the important task. Ratio analysis is a very powerful analytical tool useful for measuring performance of an organization. Ratio analysis is extremely helpful in providing valuable insight into a company's financial picture. Ratios normally show a business strength and weaknesses.

Objective of Ratio Analysis:

- ◆ To show relative strengths and weakness.
- ◆ To helps to analyze the past performance and to make further projections.
- ◆ To allows interested parties like shareholders investors, creditors, government and analysis to make an evaluation of certain aspects of a firm's performance.

- ◆ To concentrates on the inter-relationship among the figures appearing in financial statements.
- ◆ To provide an easy way to compare present performance with past.
- ◆ To depict the areas in which business is competitively advantaged or disadvantaged.
- ◆ To determines the financial condition and performance of the firm.
- ◆ To helps to take suitable corrective measures when the financial conditions and performance are unfavorable to the firm.

Q. 6. Distinguish between: Return on capital employed & Return on net worth
[Dec. 2010 (5 Marks)]

Ans. Following are the main points of difference between return on capital employed & return on net worth:

Points	Return on capital employed	Return on net worth
Meaning	This ratio shows how much a company is earning on its investments <i>i.e.</i> capital employed.	This ratio expresses the net profit in terms of the shareholders funds.
Formula	$\frac{\text{Operating Profit (EBIT)}}{\text{Capital Employed}} \times 100$	$\frac{\text{Profit After Tax (PAT)}}{\text{Net Worth}} \times 100$
Importance	It reflects the overall efficiency with which capital/assets are used.	It indicates the return generated on the net worth of firm.

Q. 7. A firm having high current ratio may not necessarily be treated as being favourably placed as regards payment of its current liabilities. Comment.
[Dec. 2015 (5 Marks)]

Ans.

$$\text{Current ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities \& Provisions}}$$

The ideal Current ratio is taken as 2:1.

This ratio measures the **short-term solvency** of the company.

Current Assets are those assets, which can be converted into cash within a year.

Current Liabilities and provisions are those liabilities that are payable within a year.

Significance: A very high current ratio will have adverse impact on the profitability of the organization. A high current ratio may be due to high level of inventory, inefficiency in collection of debtors, high balances in cash and bank accounts without proper investments. Thus it is correct to say that firm having high current ratio may not necessarily be treated as being favourably placed as regards payment of its current liabilities.

PROBLEMS & SOLUTIONS

Problem No. 1] From the following information make out a statement of proprietors fund with details:

Current ratio	2.5
Liquid ratio	1.5
Proprietary ratio (fixed assets/proprietary fund)	0.75
Working capital	₹60,000
Reserve & surplus	₹40,000
Bank overdraft	₹10,000

There is no long term loans and fictitious asset.

[Dec. 2009 (6 Marks)]

Ans.

Balance Sheet

EQUITY & LIABILITIES		₹	₹
Shareholder's Funds:			
Share Capital		2,00,000	
Reserve & Surplus		40,000	2,40,000
Current Liabilities:			
Bank Overdraft		10,000	
Other Current Liabilities		30,000	40,000
			2,80,000
ASSETS		₹	₹
Non-Current Assets:			
Fixed Assets			1,80,000
Current Assets:			
Stock		40,000	
Other Current Assets		60,000	1,00,000
			2,80,000

Calculation of current assets & current liabilities:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$2.5 = \frac{x}{y}$$

$$2.5y = x$$

$$\text{Current assets} - \text{Current liabilities} = \text{Working capital}$$

$$x - y = 60,000$$

$$2.5y - y = 60,000$$

$$1.5y = 60,000$$

$$y = \text{Current liabilities} = \frac{60,000}{1.5} = 40,000$$

$$x = \text{Current assets} = 40,000 \times 2.5 = 1,00,000$$

Calculation of stock:

$$\text{Liquid Ratio} = \frac{\text{Current Assets} - \text{Stock}}{\text{Current Liabilities}}$$

$$1.5 = \frac{1,00,000 - x}{40,000}$$

$$60,000 = 1,00,000 - x$$

$$x = \text{stock} = 40,000$$

Calculation of proprietary fund & fixed assets:

$$\text{Proprietary ratio} = \frac{\text{Fixed assets}}{\text{Proprietary fund}}$$

$$0.75 = \frac{x}{y}$$

$$0.75y = x$$

$$\text{Proprietary Fund} + \text{Current Liabilities} = \text{Fixed Assets} + \text{Current Assets}$$

$$y + 40,000 = x + 1,00,000$$

$$y + 40,000 = 0.75y + 1,00,000$$

$$0.25y = 60,000$$

$$y = \text{Proprietary fund} = \frac{60,000}{0.25} = 2,40,000$$

$$x = \text{Fixed assets} = 2,40,000 \times 0.75 = 1,80,000$$

Problem No. 2] Balance Sheet & Income Statement of AG Ltd. for the year 31.3.2009 are as under:

*Income statement of AG Ltd.
For the year 31st March 2009*

Sales	(₹ '000)
	1,600
Less: Cost of goods sold	<u>(1,310)</u>
Gross margin	290
Less: Selling & administrative expenses	<u>(40)</u>
EBIT	250
Less: Interest expenses	<u>(45)</u>
Earnings before tax	205
Less: Tax	<u>(82)</u>
Net profit	<u>123</u>

Balance Sheet as on 31st March 2009

LIABILITIES

Paid-up capital (40,000 equity shares of ₹10 each)	(₹ '000)
Retained earnings	400
Debentures	120
Creditors	700
Bills payable	180
Other current liabilities	20
	80
	<u>1,500</u>

ASSETS

Net fixed assets	800
Inventors	400
Debtors	175
Marketable securities	75
Cash	50
	<u>1,500</u>

Price per share: ₹15

Industry's average ratios are:

Current ratio	2.4
Quick ratio	1.5
Sales to inventors	8 times
Average collection period	36 days
Debt to assets	40%
Debt equity	2:1
Times interest earned	6
Net profit margin	7%
Price to earnings	15
Return to total assets	11%

From the above facts and figures, you are required to:

- Calculate the relevant ratios and interpret them to identify the problems areas.
- Based on the ratio analysis, as a *Company Secretary*, prepare a report for consideration of your board of directors clearly bringing out the reasons in respect of identified problem areas and giving suggestions to solve them.

[June 2010 (15 Marks)]

Ans.

Particulars	Formula	AG Ltd.	Indus-try	Comment
Current ratio	$\frac{\text{Current assets}}{\text{Current liabilities}}$	$\frac{700}{280} = 2.5$	2.40	Current ratio is slightly high as compared to industry average ratio. This is due to high level of stock.

(₹ '000)

Particulars	Formula	AG Ltd.	Industry	Comment
Quick ratio	$\frac{\text{Quick assets}}{\text{Current liabilities}}$	$\frac{300}{280} = 1.07$	1.5	This ratio shows how much time liquid assets are to current liabilities. Ratio is less as compared to industry average ratio. But at same time it is noted that difference in quick ratio and current ratio is high which indicate that heavy accumulation of stock.
Sales/stock	$\frac{\text{Sales}}{\text{Stock}}$	$\frac{1600}{400} = 4$	8	This ratio shows the movement of stock. The ratio is week; as stock remains without movement for 108 days where as for other firms in industry it remains for just for 37 days.
		$\frac{1}{4} \times 360 = 90 \text{ days}$	45 days	
Average collection period	$\frac{\text{Debtors}}{\text{Credit sales}} \times 360$	$\frac{175}{1,600} \times 360 = 40 \text{ days}$	36 days	This ratio shows the average collection period. Ratio is satisfactory as compared to industry average ratio. It is indicating that company takes 40 days to collect the money from debtors whereas other firms in industries are taking 36 days.
Debt to assets	$\frac{\text{Total debts}}{\text{Total assets}} \times 100$	$\frac{700}{1,500} \times 100 = 46.67\%$	40%	This ratio is the relation between borrowed funds and total assets. This ratio is used to ascertain the soundness of long-term financial policies of the business. The ratio is satisfactory as it is near to industry average ratio.
Debt equity	$\frac{\text{Debt}}{\text{Equity}}$	$\frac{700}{620} = 1.13$	2	This ratio shows the relation between borrowed funds and owners capital. It is also

Particulars	Formula	AG Ltd.	Industry	Comment
				known as external-internal equity ratio. The Debt-Equity Ratio is used to ascertain the soundness of long-term financial policies of the business. The ratio is low which shows that long term financing options are not properly availed by the company.
Times interest earned	$\frac{\text{EBIT}}{\text{Interest}}$	$\frac{250}{45} = 5.55$	6	This ratio shows how many times interest charges are covered by funds that are available for payment of interest. A very ratio indicates that the firm is conservative in using debt and a very low ratio indicates excessive use of debt.
Price to earnings	$\frac{\text{Market price}}{\text{EPS}}$	$\frac{15}{3.075} = 4.88$	15	This ratio measure the number of times the EPS to share price of a company. This ratio reflects the market's assessment of the future earnings potential of the company. This ratio is low as compared to industry average ratio which indicates low earning potential and less market's confidence in the company's equity.
Return to total assets	$\frac{\text{Net profit}}{\text{Total assets}} \times 100$	$\frac{123}{1,500} \times 100 = 8.2\%$	11%	This ratio reflects net profit margin on the total assets. The ratio is less than industry average ratio and hence position is not satisfactory.

Problem No. 3] Following are the ratios to the trading activities of National Traders Ltd.:

Debtor's velocity	3 months
Stock velocity	8 months
Creditor's velocity	2 months
Gross profit ratio	25%

Gross profit for the year ended 31st December, 2009 amounting to ₹4,00,000. Closing stock of the year is ₹10,000 more than the opening stock. Bills receivable amount to ₹25,000. Bills payable amount to ₹10,000.

Find out:

- (i) Sales
- (ii) Sundry debtors
- (iii) Closing stock
- (iv) Sundry creditors

[June 2011 (6 Marks)]

Ans.

Calculation of sales:

$$\text{Gross profit ratio} = \frac{\text{Gross profit}}{\text{Sales}} \times 100$$

$$25 = \frac{4,00,000}{x} \times 100$$

$$x = \text{Sales} = 16,00,000$$

Calculation of debtors:

$$\text{Debtors velocity} = \frac{\text{Account receivable}}{\text{Credit sales}} \times 12$$

$$3 = \frac{x}{16,00,000} \times 12$$

$$x = \text{Account receivable} = 4,00,000$$

$$\text{Debtors} + \text{Bills receivable} = \text{Account receivable}$$

$$x + 25,000 = 4,00,000$$

$$x = \text{Debtors} = 3,75,000$$

Calculation of closing stock:

Sales	16,00,000
-------	-----------

(-) Gross profit 25%	(4,00,000)
----------------------	------------

Cost of goods sold	12,00,000
--------------------	-----------

$$\text{Stock velocity} = \frac{\text{Average Stock}}{\text{Cost of goods sold}} \times 12$$

$$8 = \frac{x}{12,00,000} \times 12$$

$$x = \text{Average Stock} = 8,00,000$$

$$\text{Opening stock} = x$$

$$\text{Closing stock} = x + 10,000$$

$$\text{Average Stock} = \frac{\text{Opening Stock} + \text{Closing stock}}{2}$$

$$8,00,000 = \frac{x + (x + 10,000)}{2}$$

$$16,00,000 = 2x + 10,000$$

$$15,90,000 = 2x$$

$$x = \text{Opening stock} = 7,95,000$$

$$\text{Closing stock} = 7,95,000 + 10,000 = 8,05,000$$

Calculation of sundry creditors:

$$\text{Opening stock} + \text{Purchase} - \text{Closing stock} = \text{Cost of goods sold}$$

$$7,95,000 + x - 8,05,000 = 12,00,000$$

$$x = \text{Purchase} = 12,10,000$$

$$\text{Creditors velocity} = \frac{\text{Accounts payable}}{\text{Credit purchases}} \times 12$$

$$2 = \frac{x}{12,10,000} \times 12$$

$$x = \text{Accounts payable} = 2,01,667$$

$$\text{Creditors} + \text{Bills payable} = \text{Account payable}$$

$$x + 10,000 = 2,01,667$$

$$x = \text{Creditors} = 1,91,667$$

Problem No. 4] Following figures and ratios are related to a company:

Sales for the year (all credit)	₹ 30,00,000
Gross profit ratio	25%
Fixed assets turnover (based on cost of goods sold)	1.5
Stock turnover (based on cost of goods sold)	6
Liquid ratio	1:1
Current ratio	1.5:1
Debtors collection period	2 months
Reserves and surplus to share capital	0.6:1
Capital gearing ratio	0.5
Fixed assets to net worth	1.20:1

You are required to prepare:

- (a) Balance Sheet of the company on the basis of above details.
 (b) The statement showing working capital requirement, if the company wants to make a provision for contingencies @ 10% of net working capital including such provision.

[Dec. 2011 (10 Marks)]

Ans.

Balance Sheet

EQUITY & LIABILITIES		₹	₹
Shareholder's Funds (Net Worth)			
Share Capital		7,81,250	
Reserve & Surplus		4,68,750	12,50,000
Non-Current Liabilities			
Long Term Debts			6,25,000
Current Liabilities			
			7,50,000
			26,25,000
ASSETS		₹	₹
Non-Current Assets			
Fixed Assets			15,00,000
Current Assets:			
Stock		3,75,000	
Debtors		5,00,000	
Cash & bank [Bal. Fig.]		2,50,000	11,25,000
			26,25,000

Statement showing working capital requirement:

Current Assets	11,25,000
(-) Current Liabilities	(7,50,000)
Gross Working Capital	3,75,000
(+) Contingency @ 10% of net working capital (3,75,000 × 10/90)	41,667
Net working capital	4,16,667

Calculation of stock:

Sales	30,00,000
(-) Gross profit 25%	(7,50,000)
Cost of goods sold	22,50,000

$$\text{Stock turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Stock}}$$

$$6 = \frac{22,50,000}{x}$$

$$x = \text{Stock} = 3,75,000$$

Calculation of current assets & current liabilities:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$1.5 = \frac{x}{y}$$

$$1.5y = x$$

$$\text{Liquid Ratio} = \frac{\text{Current Assets} - \text{Stock}}{\text{Current Liabilities}}$$

$$1 = \frac{1.5y - 3,75,000}{y}$$

$$1y = 1.5y - 3,75,000$$

$$0.5y = 3,75,000$$

$$y = \text{Current Liabilities} = 7,50,000$$

$$\text{Current Assets} = 7,50,000 \times 1.5 = 11,25,000$$

Calculation of debtors:

$$\text{Debt collection period} = \frac{\text{Debtors}}{\text{Credit Sales}} \times 12$$

$$2 = \frac{x}{30,00,000} \times 12$$

$$x = \text{Debtors} = 5,00,000$$

Calculation of fixed assets:

$$\text{Fixed assets to turnover ratio} = \frac{\text{Cost of goods sold}}{\text{Fixed assets}}$$

$$1.5 = \frac{22,50,000}{x}$$

$$x = \text{Fixed assets} = 15,00,000$$

Calculation of net worth:

$$\text{Fixed assets to net worth} = \frac{\text{Fixed Assets}}{\text{Net Worth}}$$

$$1.20 = \frac{15,00,000}{x}$$

$$x = \text{Net Worth} = 12,50,000$$

Calculation of long term debts:

$$\text{Capital Gearing Ratio} = \frac{\text{Long Term Debts}}{\text{Shareholder's Funds}}$$

$$0.5 = \frac{x}{12,50,000}$$

$$x = \text{Long Term Debts} = 6,25,000$$

Calculation of reserve & capital:

$$\text{Reserve to Capital} = \frac{\text{Reserve}}{\text{Capital}}$$

$$0.6 = \frac{x}{y}$$

$$0.6y = x$$

$$\text{Capital} + \text{Reserve} = \text{Net worth}$$

$$y + x = 12,50,000$$

$$y + 0.6y = 12,50,000$$

$$1.6y = 12,50,000$$

$$y = \text{Capital} = 7,81,250$$

$$x = \text{Reserve} = 7,81,250 \times 0.6 = 4,68,750$$

Problem No. 5] From the following particulars prepare the balance sheet of Shri Mohan Ram & Co. Ltd.:

Current ratio	2
Working capital	₹4,00,000
Capital block to current assets	3:2
Fixed assets to turnover	1:3
Sales cash/credit	1:2
Debenture/share capital	1:2
Stock velocity	2 months
Creditors velocity	2 months
Debtors velocity	3 months
Gross profit ratio	25% (to sales)
Net profit	10% of turnover
Reserve	2.5% of turnover

[June 2012 (9 Marks)]

Ans.

Balance Sheet

EQUITY & LIABILITIES	₹	₹
Capital Block	6,00,000	
Share Capital		

	₹	₹
EQUITY & LIABILITIES		
Net Profit	2,40,000	
Reserve & Surplus	60,000	
Debentures	3,00,000	12,00,000
Current Liabilities	3,00,000	
Creditors	1,00,000	4,00,000
Other Current Liabilities		16,00,000
ASSETS		
Non-Current Assets		
Fixed Assets		8,00,000
Current Assets	3,00,000	
Stock	4,00,000	
Debtors	1,00,000	8,00,000
Cash & Bank [Bal. Fig.]		16,00,000

Calculation of current assets & current liabilities:

$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$2 = \frac{x}{y}$$

$$2y = x$$

$$CA - CL = WC$$

$$x - y = 4,00,000$$

$$2y - y = 4,00,000$$

$$y = 4,00,000$$

$$x = 4,00,000 \times 2 = 8,00,000$$

Calculation of capital block:

$$\text{Capital Block to Current Assets} = \frac{\text{Capital Block}}{\text{Current Assets}}$$

$$\frac{3}{2} = \frac{x}{8,00,000}$$

$$x = \text{Capital Block} = 12,00,000$$

Calculation of fixed assets:

$$\text{Capital Block} + \text{Current Liabilities} = \text{Total Assets}$$

$$12,00,000 + 4,00,000 = 16,00,000$$

$$\text{Total Assets} - \text{Current Assets} = \text{Fixed Assets}$$

$$16,00,000 - 8,00,000 = 8,00,000$$

Calculation of turnover:

$$\text{Fixed Assets To Turnover} = \frac{\text{Fixed Assets}}{\text{Turnover}}$$

$$\frac{1}{3} = \frac{8,00,000}{x}$$

$$x = \text{Turnover (Sales)} = 24,00,000$$

Calculation of cash & credit sales:

$$\text{Sales Cash/Credit} = \frac{\text{Cash Sales}}{\text{Credit Sales}}$$

$$\frac{1}{2} = \frac{x}{y}$$

$$y = 2x$$

$$\text{Cash Sales} + \text{Credit Sales} = \text{Total Sales}$$

$$x + y = 24,00,000$$

$$x + 2x = 24,00,000$$

$$3x = 24,00,000$$

$$x = \text{Cash sales} = 8,00,000$$

$$\text{Credit sales} = 16,00,000$$

Calculation of stock:

Sales	24,00,000
(-) Gross profit 25%	(6,00,000)
Cost of goods sold	18,00,000

$$\text{Stock Velocity} = \frac{\text{Stock}}{\text{Cost of goods sold}} \times 12$$

$$2 = \frac{x}{18,00,000} \times 12$$

$$x = \text{Stock} = 3,00,000$$

Calculation of debtors:

$$\text{Debtors velocity} = \frac{\text{Debtors}}{\text{Credit sales}} \times 12$$

$$3 = \frac{x}{16,00,000} \times 12$$

$$x = \text{Debtors} = 4,00,000$$

Calculation of creditors:

$$\text{Creditors Velocity} = \frac{\text{Creditors}}{\text{Cost of goods sold}} \times 12$$

Note: Since, credit purchase figure is not available; creditors are calculated on the basis of cost of goods sold.

$$2 = \frac{x}{18,00,000} \times 12$$

$$x = \text{Creditors} = 3,00,000$$

Calculation of net profit:

$$\text{Sales} \times 10\% = \text{Net profit}$$

$$24,00,000 \times 10\% = 2,40,000$$

Calculation of reserve & surplus:

$$\text{Sales} \times 2.5\% = \text{Reserve \& surplus}$$

$$24,00,000 \times 2.5\% = 60,000$$

Calculation of capital & debentures:

$$\frac{\text{Debentures}}{\text{Share Capital}} = \frac{\text{Debentures}}{\text{Share Capital}}$$

$$\frac{1}{2} = \frac{y}{x}$$

$$x = 2y$$

$$\text{Capital} + \text{Net Profit} + \text{Reserve \& surplus} + \text{Debentures} = \text{Capital block}$$

$$x + 2,40,000 + 60,000 + y = 12,00,000$$

$$2y + 2,40,000 + 60,000 + y = 12,00,000$$

$$3y = 9,00,000$$

$$y = \text{Debenture} = 3,00,000$$

$$x = \text{Share capital} = 6,00,000$$

Problem No. 6] From the following particulars, you are required to prepare the balance sheet of a Zinc Company:

Fixed assets (after writing off 30%)	₹ 10,50,000
Fixed assets turnover ratio (on cost of sales)	2
Finished goods turnover ratio (on cost of sales)	6
GP rate on sales	25%
Net profit (before interest) to sales	8%
Fixed charges cover (debenture interest 7%)	8
Debt collection period	1.5 Months
Material consumed to sales	30%
Stock of raw materials (in terms of months consumption)	3
Current ratio	2.4
Quick ratio	1.0
Reserve to capital ratio	0.21

[June 2013 (12 Marks)]

Ans.

Balance Sheet

EQUITY & LIABILITIES		₹	₹
Shareholder's Funds:			
Share Capital		10,00,000	
Reserve & Surplus		2,10,000	12,10,000
Non-Current Liabilities:			
7% Debentures			4,00,000
Current Liabilities:			
			4,00,000
			20,10,000
ASSETS		₹	₹
Non-Current Assets:			
Fixed Assets			10,50,000
Current Assets:			
Debtors		3,50,000	
Stock of Finished Goods		3,50,000	
Stock of Raw Material		2,10,000	
Cash & Bank [Bal. Fig.]		50,000	9,60,000
			20,10,000

Calculation of fixed assets:

$$\text{Fixed assets turnover ratio} = \frac{\text{Cost of sales}}{\text{Fixed assets}}$$

$$2 = \frac{x}{10,50,000}$$

$$x = \text{Cost of sales} = 21,00,000$$

Calculation of sales:

Gross profit is 25% on sales that means $1/3^{\text{rd}}$ or 33.33% on cost.

$$\text{Gross profit} = 21,00,000 \times 1/3 = 7,00,000$$

$$\text{Cost of sales} + \text{Gross profit} = \text{Sales}$$

$$21,00,000 + 7,00,000 = 28,00,000$$

Calculation of finished goods stock:

$$\text{Finished goods turnover ratio} = \frac{\text{Cost of sales}}{\text{Finished goods}}$$

$$6 = \frac{21,00,000}{x}$$

$$x = \text{Finished goods} = 3,50,000$$

Calculation of net profit before interest:

$$\text{Sales} \times 8\% = \text{EBIT}$$

$$28,00,000 \times 8\% = 2,24,000$$

Calculation of debenture:

$$\text{Fixed Charges Cover} = \frac{\text{EBIT}}{\text{Interest}}$$

$$8 = \frac{2,24,000}{x}$$

$$x = \text{Interest} = 28,000$$

Rate of debenture interest is 7%

For 7% interest - 28,000

For 100% - ?

$$\text{Debenture} = \frac{100 \times 28,000}{7}$$

$$\text{Debenture} = 4,00,000$$

Calculation of debtors:

$$\text{Debt collection period} = \frac{\text{Debtors}}{\text{Credit sales}} \times 12$$

$$1.5 = \frac{x}{28,00,000} \times 12$$

$$x = \text{Debtors} = 3,50,000$$

Calculation of raw material stock:

Sales \times 30% = Material consumed

$$28,00,000 \times 30\% = 8,40,000$$

$$\text{Raw material stock velocity} = \frac{\text{Stock of raw material}}{\text{Material consumed}} \times 12$$

$$3 = \frac{x}{8,40,000} \times 12$$

$$x = \text{Stock of raw material} = 2,10,000$$

Calculation of current assets & current liabilities:

Stock of finished goods + Stock of raw material = Total stock

$$3,50,000 + 2,10,000 = 5,60,000$$

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$2.4 = \frac{x}{y}$$

$$2.4y = x$$

$$\text{Quick ratio} = \frac{\text{Current assets} - \text{Stock}}{\text{Current liabilities}}$$

$$1 = \frac{2.4y - 5,60,000}{y}$$

$$1y = 2.4y - 5,60,000$$

$$y = \text{Current liabilities} = 4,00,000$$

$$\text{Current assets} = 4,00,000 \times 2.4 = 9,60,000$$

Calculation of reserve & capital:

$$\text{Fixed assets} + \text{Current assets} - \text{current liabilities} - \text{debenture} = \text{Net worth}$$

$$10,50,000 + 9,60,000 - 4,00,000 - 4,00,000 = 12,10,000$$

$$\text{Reserve to capital} = \frac{\text{Reserve}}{\text{Capital}}$$

$$0.21 = \frac{x}{y}$$

$$0.21y = x$$

$$\text{Capital} + \text{Reserve} = \text{Net worth}$$

$$y + x = 12,10,000$$

$$y + 0.21y = 12,10,000$$

$$1.21y = 12,10,000$$

$$y = \text{Capital} = 10,00,000$$

$$x = \text{Reserve} = 10,00,000 \times 0.21 = 2,10,000$$

Problem No. 7] You have applied for the position of Assistant Company Secretary in Sashvati Ltd. As part of the pre-interview scanning, the following information has been provided to you:

Sales	₹ 1,825 lakh
Net Worth to Sales	90%
Current Liabilities to Net Worth	20%
Total Debt to Net Worth	50%
Receivables average collection period	44 Days
Inventory Turnover (Based on Cost of Goods Sold)	4.839 Times
Number of days in a year	365
Ratio of inventory, receivables and cash & bank balance in current assets	3:2:1

Cash sales are 1/4th of credit sales.

As part of scanning exercise, you are required to calculate and inform to the interviewer, following values:

- (1) Non-current debt (as per the Companies Act, 2013)
- (2) Receivables

- (3) Current assets
(4) Cost of goods sold

[June 2019 (5 Marks)]

Ans.

Calculation of non-current debt:

$$\text{Net Worth} = 1,825 \text{ lakh} \times 90\% = 1,642.50 \text{ lakh}$$

$$\text{Current Liabilities} = 1,642.50 \text{ lakh} \times 20\% = 328.50 \text{ lakh}$$

$$\text{Total Debt} = 1,642.50 \text{ lakh} \times 50\% = 821.25 \text{ lakh}$$

$$\text{Non-Current Debt} = 821.25 \text{ lakh} - 328.50 \text{ lakh} = 492.75 \text{ lakh}$$

Calculation of receivables:

$$\text{Sales} = \text{Cash Sales} + \text{Credit Sales}$$

$$1,825 \text{ lakh} = 0.25x + x$$

$$1,825 \text{ lakh} = 1.25x$$

$$x = \text{Credit Sales} = 1,460 \text{ lakh}$$

$$\text{Receivables collection period} = \frac{\text{Debtors}}{\text{Credit sales}} \times 365 \text{ days}$$

$$44 = \frac{x}{1,460 \text{ lakh}} \times 365 \text{ days}$$

$$x = \text{Receivables} = 176 \text{ lakh}$$

Calculation of current assets:

Ratio of inventory, receivables and cash & bank balance in current assets is 3:2:1 = 6

Receivables are 176 lakh.

$$\text{Current Assets} = 176 \text{ lakh} \times \frac{6}{2} = 528 \text{ lakh}$$

$$\text{Hence, Current Assets} = 176 \text{ lakh} \times 6/2$$

Calculation of cost of goods sold:

$$\text{Inventory} = 176 \text{ lakh} \times \frac{3}{2} = 264 \text{ lakh}$$

$$\text{Inventory Turnover} = \frac{\text{Cost of goods sold}}{\text{Inventory}}$$

$$4.839 = \frac{\text{Cost of goods sold}}{264 \text{ lakh}}$$

$$\text{Cost of goods sold} = 1277.496 \text{ lakh}$$

CASH FLOW STATEMENT

THEORETICAL QUESTIONS

Q. 1. Distinguish between: Cash Flow Statement & Fund Flow Statement [June 2002 (10 Marks)]

Ans.

Following are the main points of difference between cash flow statement & fund flow statement:

Points	Cash Flow Statement	Funds Flow Statement
Meaning	A cash flow statement is a statement showing change in cash position from one period to another.	Fund flow statement is statement of sources & application of funds and statement of changes in working capital.
Concerned with	Cash flow statement is concerned with cash only, which is only a part of the working capital.	Funds flow statement is based on a wider concept of fund i.e. working capital.
Adjustments for prepaid & outstanding	In the case of cash flow statements adjustments requires for prepaid and outstanding items.	No such adjustments are needed in the case of funds flow statement.
Opening or closing balance	Cash flow statement is covers opening and closing balance of cash and cash equivalents.	Funds flow statement does not cover opening and closing balance of cash and cash equivalents. Such items are covered in statement called 'changes in working capital'.
Use	Cash flow statement is generally used as a tool of short-term financial analysis and cash planning purpose.	Funds flow statement is useful in planning sources and application of various funds.

Q. 2. Distinguish between: 'Cash' and 'Cash Equivalents' [Dec. 2008 (3 Marks)]

Or

Write short notes on: Cash, Cash Equivalents and Cash Flows

[June 2010 (3 Marks)]

Ans.

Cash: Cash comprises cash on hand and demand deposits with banks.

Cash Equivalents: Cash equivalents are short term, highly liquid investments that are readily convertible into known amounts of cash and which are subject to an insignificant risk of changes in value.

Cash Flows: Cash flows are inflows and outflows of cash and cash equivalents.

Cash & Cash Equivalents: Cash equivalents are held for the purpose of meeting short-term cash commitments rather than for investment or other purposes. For an investment to qualify as a cash equivalent, it must be readily convertible to a known amount of cash and be subject to an insignificant risk of changes in value.

Therefore, an investment normally qualifies as a cash equivalent only when it has a short maturity of, say, 3 months or less from the date of acquisition.

Investments in shares are excluded from cash equivalents unless they are, in substance, cash equivalents; for example, preference shares of a company acquired shortly before their specified redemption date (provided there is only an insignificant risk of failure of the company to repay the amount at maturity).

Cash flows exclude movements between items that constitute cash or cash equivalents because these components are part of the cash management of an enterprise rather than part of its operating, investing and financing activities. Cash management includes the investment of excess cash in cash equivalents.

Q. 3. What are the benefits of cash flow statement? Mention the parties who are benefited from preparing cash flow statement. [Dec. 2009 (6 Marks)]

Ans. A cash flow statement is a statement showing change in cash position from one period to another. It presents a summary of cash flows from operating, investing and financing activities.

Example:

Cash balance as on 31.12.2023 – ₹20,000

Cash balance as on 31.12.2024 – ₹30,000

Thus, there has been an inflow of cash of ₹10,000 in the year 2024.

A projected cash flow statement: It presents a summary of projections of all the future cash flows from operating, investing and financing activities.

Benefits of cash flow statement: A cash flow statement is very useful in short range planning. It enables the management to plan the acquisition and utilization cash for a sound financial position. The importance and uses of cash flow analysis can be summarized in the following respects:

- ◆ It explains the reasons for inflows and outflows of cash.
- ◆ It is important tool for planning cash requirements and for controlling the cash position.
- ◆ It facilitates the management to plan and co-ordinate the financial operations properly.
- ◆ It helps for making plans for the future.
- ◆ It helps in ascertaining how much cash will be available to meet obligations to trade creditors, to pay bank loans and to pay dividend to the shareholders.
- ◆ It enables the management to invest it to some profitable investments.
- ◆ It helps to improve liquidity.

- ◆ Long-term lenders of funds can use the statement as a means of estimating the firm's ability to serve its debts.

Q. 4. Classify the following activities as (i) Operating activities (ii) Investing activities (iii) Financing activities (iv) Cash & cash equivalents:

- (1) Royalty received
- (2) Brokerage paid on purchase of shares
- (3) Buy-back of own shares for cash
- (4) Marketable securities having maturity period of 3 months
- (5) Short-term deposits having maturity period of 4 months.

[June 2019 (5 Marks)]

Ans.

- (1) Royalty received: Operating Activities
- (2) Brokerage paid on purchase of shares: Investing Activities
- (3) Buy-back of own shares for cash: Financing Activities
- (4) Marketable Securities having maturity period of 3 months: Cash and Cash Equivalent
- (5) Short-term deposits having maturity period of 4 months: Investing Activities

PROBLEMS & SOLUTIONS

Problem No. 1] The Amex Ltd. gives the following condensed balance sheets relating to years 2021 and 2022 and the profit and loss appropriation account for the year 2022:

Balance sheets of Amex Ltd. as on 31st March 2021 and 2022

EQUITY & LIABILITIES	2021 (₹)	2022 (₹)
Share capital	5,00,000	6,00,000
Reserves	1,50,000	1,80,000
Profit and loss account	40,000	65,000
Debentures	3,00,000	2,50,000
Creditors for goods	1,70,000	1,60,000
Provision for income-tax	60,000	80,000
	<u>12,20,000</u>	<u>13,35,000</u>
ASSETS	(₹)	(₹)
Gross block	10,00,000	11,20,000
Less: Depreciation	(3,70,000)	(4,60,000)
Net block	<u>6,30,000</u>	<u>6,60,000</u>
Stock in trade	2,40,000	3,70,000
Book debts	2,50,000	2,30,000
Cash in hand and at bank	80,000	60,000
Misc. expenditures:		
- Discount on issue of shares	10,000	7,500
- Preliminary expenses	10,000	7,500
	<u>12,20,000</u>	<u>13,35,000</u>

P & L Appropriation A/c for the year ended 31.3.2022

		₹			₹
To Transfer to reserves	30,000		By Balance b/d		40,000
To Interim dividend paid	80,000		By Net Profit for current year		
To Bal. carried to balance sheet	65,000				1,35,000
		<u>1,75,000</u>			<u>1,75,000</u>

You are required to prepare cash flow statement showing the following:

- (i) Cash from operating activities
- (ii) Cash from financing activities
- (iii) Cash from investing activities
- (iv) Net increase/decrease in cash

[Dec. 2007 (3 + 2 + 1 + 1 = 7 Marks)]

Ans.

Cash Flow Statement (Indirect Method)

For the year ended 31.12.2009

Particulars	₹	₹
Cash flows from operating activities		
Net profit before working capital changes	3,10,000	
(+) Decrease in Current Assets		
- Book debts (debtors)	20,000	
(-) Increase in Current Assets		
- Stock in trade	(1,30,000)	
(+) Increase in Current Liabilities		
(-) Decrease in Current Liabilities		
- Creditors for goods	(10,000)	
Cash generated from operation	1,90,000	
Income-tax paid	(60,000)	
Cash before extra ordinary item	1,30,000	
Extra ordinary item	-	1,30,000
Cash flow from investing activities:		
Fixed assets purchased	(1,20,000)	(1,20,000)
Cash flows from financing activities:		
Issue of shares		
Redemption of debenture	1,00,000	
Dividend paid	(50,000)	
Total (A) + (B) + (C)	(80,000)	(30,000)
Cash & cash equivalent at the beginning		(20,000)
Cash & cash equivalent at the end		80,000
		60,000

Share Capital A/c		Cr.	
Dr.		By Balance b/d	5,00,000
To Balance c/d	6,00,000	By Bank A/c [Bal. Fig.]	1,00,000
	6,00,000		6,00,000

Reserve A/c		Cr.	
Dr.		By Balance b/d	1,50,000
To Balance c/d	1,80,000	By P & L Adj. A/c [Bal. Fig.]	30,000
	1,80,000		1,80,000

Debentures A/c		Cr.	
Dr.		By Balance b/d	3,00,000
To Bank A/c [Bal. Fig.]	50,000		
To Balance c/d	2,50,000		
	3,00,000		3,00,000

Provision For Tax A/c		Cr.	
Dr.		By Balance b/d	60,000
To Bank A/c	60,000	By P & L Adj. A/c [Bal. Fig.]	80,000
To Balance c/d	80,000		
	1,40,000		1,40,000

Fixed Assets A/c		Cr.	
Dr.			
To Balance b/d	10,00,000	By Balance c/d	11,20,000
To Bank A/c [Bal. Fig.]	1,20,000		
	11,20,000		11,20,000

Depreciation A/c		Cr.	
Dr.		By Balance b/d	3,70,000
To Balance c/d	4,60,000	By P & L Adj. A/c	90,000
	4,60,000		4,60,000

Discount on Issue of Shares A/c		Cr.	
Dr.			
To Balance b/d	10,000	By P & L Adj. A/c [Bal. Fig.]	2,500
		By Balance c/d	7,500
	10,000		10,000

Preliminary Expenses A/c		Cr.	
Dr.			
To Balance b/d	10,000	By P & L Adj. A/c [Bal. Fig.]	2,500
		By Balance c/d	7,500
	10,000		10,000

Interim Dividend A/c		Cr.	
Dr.			
To Bank A/c [Bal. Fig.]	80,000	By P & L Adj. A/c	80,000
	80,000		80,000

Dr.		Profit & Loss Adjustment A/c		Cr.	
To Reserve	30,000	By Balance b/d		40,000	
To Provision for tax	80,000	By Profit before working		3,10,000	
To Depreciation	90,000	capital changes [Bal. Fig.]			
To Discount on shares	2,500				
To Preliminary expenses	2,500				
To Interim dividend	80,000				
To Balance c/d	65,000				
	<u>3,50,000</u>				<u>3,50,000</u>

Problem No. 2] Following are the summarized balance sheets of Gamma Ltd. as at 31st March, 2023 and 31st March, 2024:

EQUITY & LIABILITIES

Shareholder's Funds

Share capital	4,50,000	4,50,000
General reserve	3,00,000	3,10,000
Profit and loss account	56,000	68,000

Non-Current Liabilities

Mortgage loan	-	2,70,000
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Current Liabilities

Creditors	1,68,000	1,34,000
Provision for taxation	75,000	10,000
	<u>10,49,000</u>	<u>12,42,000</u>

ASSETS

Non-Current Assets

Plant and machinery	4,00,000	3,20,000
Investments	50,000	60,000

Current Assets

Inventory	2,40,000	2,10,000
Debtors	2,10,000	4,55,000
Cash at bank	1,49,000	1,97,000
	<u>10,49,000</u>	<u>12,42,000</u>

Additional information:

- Investments costing ₹ 8,000 were sold during the year for ₹ 8,500.
- Provision for taxation made during the year was ₹ 9,000.
- During the year, a part of plant and machinery costing ₹ 10,000 was sold for ₹ 12,000, the profit was included in profit and loss account.
- Dividend paid during the year amounted to ₹ 44,080.

You are required to prepare cash flow statement in new format as per Accounting Standard (Revised) by indirect method.

[June 2008 (10 Marks)]

Cash Flow Statement (Indirect Method)
For the year ended 31.3.2024

Ans.

Particulars	₹	₹
Cash flows from operating activities		
Net profit before working capital changes	1,42,580	
(+) Decrease in Current Assets		
- Inventory	30,000	
(-) Increase in Current Assets		
- Debtors	(2,45,000)	
(+) Increase in Current Liabilities		
(-) Decrease in Current Liabilities		
- Creditors	(34,000)	
Cash generated from operation	(1,06,420)	
Income-tax paid	(74,000)	
Cash before extra ordinary item	(1,80,420)	
Extra ordinary item		(1,80,420)
Cash flow from investing activities		
Sale of plant & machinery	12,000	
Sale of investment	8,500	
Purchase of investment	(18,000)	2,500
Cash flows from financing activities		
Mortgage loan taken	2,70,000	
Dividend paid	(44,080)	2,25,920
Total (a) + (b) + (c)		48,000
Cash & cash equivalent at the beginning		1,49,000
Cash & cash equivalent at the end		1,97,000

Dr.		Share Capital A/c	Cr.	
To Balance c/d		By Balance b/d		4,50,000
	4,50,000			
	4,50,000			4,50,000

Dr.		General Reserve A/c	Cr.	
To Balance c/d		By Balance b/d		3,00,000
	3,10,000	By P & L Adj. A/c [Bal. Fig.]		10,000
	3,10,000			3,10,000

Dr.		Provision For Tax A/c	Cr.	
To Bank A/c [Bal. Fig.]		By Balance b/d		75,000
To Balance c/d		By P & L Adj. A/c [Bal. Fig.]		9,000
	74,000			
	10,000			84,000
	84,000			

Dr.		Mortgage Loan A/c		Cr.
To Balance c/d	2,70,000	By Balance b/d		2,70,000
	2,70,000	By Bank A/c [Bal. Fig.]		2,70,000

Dr.		Plant & Machinery A/c		Cr.
To Balance b/d	4,00,000	By Bank A/c		12,000
To P & L Adj. A/c (Profit on sale)	2,000	By Depreciation A/c [Bal. Fig.]		70,000
		By Balance c/d		3,20,000
	4,02,000			4,02,000

Dr.		Investment A/c		Cr.
To Balance b/d	50,000	By Bank A/c		8,500
To P & L Adj. A/c (Profit on sale)	500	By Balance c/d		60,000
To Bank A/c [Bal. Fig.]	18,000			
	68,500			68,500

Dr.		Dividend A/c		Cr.
To Bank A/c	44,080	By P & L Adj. A/c [Bal. Fig.]		44,080
	44,080			44,080

Dr.		Profit & Loss Adjustment A/c		Cr.
To General Reserve	10,000	By Balance b/d		56,000
To Provision for tax	9,000	By Profit on sale of plant		2,000
To Depreciation	70,000	By Profit on investment		500
To Dividend	44,080	By Profit before working capital changes [Bal. Fig.]		1,42,580
To Balance c/d	68,000			
	2,01,080			2,01,080

Problem No. 3] A company has provided you the following details:

Liabilities	31.3.2022 (₹)	31.3.2023 (₹)
Share capital	70,000	74,000
Debentures	12,000	6,000
Reserve for bad debts	700	800
Trade creditors	10,360	11,840
Profit and loss account	10,040	10,560
	1,03,100	1,03,200

Assets		
Cash	9,000	7,800
Debtors	14,900	17,700
Stock	49,200	42,700
Land	20,000	30,000
Goodwill	10,000	5,000
	<u>1,03,100</u>	<u>1,03,200</u>

Additional information:

- Dividend paid ₹3,500 and
- Land was purchased for ₹10,000.

Prepare a cash flow statement as per Accounting Standard-3 (Revised).

[June 2009 (9 Marks)]

Ans.

Cash Flow Statement (Indirect Method)

For the year ended 31.3.2023

Particulars	₹	₹
Cash flows from operating activities		
Net profit before working capital changes	9,120	
(+) Decrease in Current Assets		
- Stock	6,500	
(-) Increase in Current Assets		
- Debtors	(2,800)	
(+) Increase in Current Liabilities		
- Creditors	1,480	
(-) Decrease in Current Liabilities		
	-	
Cash generated from operation	<u>14,300</u>	
Income tax paid	-	
Cash before extra ordinary item	<u>14,300</u>	
Extra ordinary item	-	14,300
Cash flow from investing activities:		
Purchase of land	(10,000)	(10,000)
Cash flows from financing activities:		
Share capital issued	4,000	
Redemption of debentures	(6,000)	
Dividend paid	(3,500)	(5,500)
Total (A) + (B) + (C)		<u>(1,200)</u>
Cash & cash equivalent at the beginning		9,000
Cash & cash equivalent at the end		<u>7,800</u>

Dr.

Share Capital A/c

Cr.

To Balance c/d	74,000	By Balance b/d	70,000
		By Bank A/c [Bal. Fig.]	4,000
	<u>74,000</u>		<u>74,000</u>

Dr.		Debenture A/c		Cr.	
To Bank A/c [Bal. Fig.]	6,000	By Balance b/d			12,000
To Balance c/d	6,000				
	12,000				12,000

Dr.		Reserve For Bad Debts A/c		Cr.	
		By Balance b/d			700
To Balance c/d	800	By P & L Adj. A/c [Bal. Fig.]			100
	800				800

Dr.		Land A/c		Cr.	
To Balance b/d	20,000				
To Bank A/c [Bal. Fig.]	10,000	By Balance c/d			30,000
	30,000				30,000

Dr.		Goodwill A/c		Cr.	
To Balance b/d	10,000	By P & L Adj. A/c			5,000
		By Balance c/d			5,000
	10,000				10,000

Dr.		Dividend A/c		Cr.	
To Bank A/c	3,500	By P & L Adj. A/c [Bal. Fig.]			3,500
	3,500				3,500

Dr.		Profit & Loss Adjustment A/c		Cr.	
To Reserve for bad debts	100	By Balance b/d			10,040
To Goodwill	5,000	By Profit before working			9,120
To Dividend	3,500	capital changes [Bal. Fig.]			
To Balance c/d	10,560				
	19,160				19,160

Problem No. 4] From the following balance sheets and information, prepare a cash flow statement of Rajat Ltd. for the year ended 31st March, 2022 as per Accounting Standard-3:

LIABILITIES

	31.3.2022	31.3.2021
<i>Shareholder's Funds</i>		
Equity share capital	(₹)	(₹)
10% Preference share capital	6,00,000	5,00,000
Capital redemption reserve	-	2,00,000
Capital reserve	1,00,000	-
General reserve	1,00,000	-
Profit and loss account	1,00,000	2,50,000
<i>Non-Current Liabilities</i>		
9% Debentures	70,000	50,000
	2,00,000	-

<i>Current Liabilities</i>		
Sundry creditors	95,000	80,000
Bills payable	20,000	30,000
Liabilities for expenses	30,000	20,000
Provision for taxation	95,000	60,000
Proposed dividend	90,000	60,000
	<u>15,00,000</u>	<u>12,50,000</u>
ASSETS		
Land and building	1,50,000	2,00,000
Plant and machinery	7,65,000	5,00,000
Investments	50,000	80,000
Inventory	95,000	90,000
Bills receivable	65,000	70,000
Sundry debtors	1,75,000	1,30,000
Cash and bank	65,000	90,000
Preliminary expenses	10,000	25,000
Voluntary separation payments	1,25,000	65,000
	<u>15,00,000</u>	<u>12,50,000</u>

Additional information:

- (i) A piece of land being sold out for ₹1,50,000 (cost ₹1,20,000) and the balance land was revalued. Capital reserve consisted of profit on sale and profit on revaluation of land and building.
- (ii) On 1st April, 2021, a plant was sold for ₹90,000 (original cost ₹70,000 and written down value ₹50,000) and debentures worth ₹1 lakh were issued at par as part consideration for plant of ₹4.5 lakh acquired.
- (iii) Part of the investments (cost ₹50,000) was sold for ₹70,000.
- (iv) Pre-acquisition dividend received ₹5,000 was adjusted against cost of investment.
- (v) Directors have proposed 15% dividend for the current year.
- (vi) Voluntary separation cost of ₹50,000 was adjusted against general reserve.
- (vii) Income-tax liability for the current year was estimated at ₹1,35,000.
- (viii) Depreciation @ 15% has been written off from plant account, but no depreciation has been charged on land and building.

[Dec. 2010 (15 Marks)]

Ans.

Cash Flow Statement (Indirect Method)
For the year ended 31.3.2022

Particulars	₹	₹
Cash flows from operating activities		
Net profit before working capital changes	3,53,000	
(+) Decrease in Current Assets		
- Bills receivable	5,000	
(-) Increase in Current Assets		
- Inventory	(5,000)	
- Sundry debtors	(45,000)	
(+) Increase in Current Liabilities		
- Creditors	15,000	
- Liabilities for expenses	10,000	
(-) Decrease in Current Liabilities		
- Bills payable	(10,000)	
Cash generated from operation	3,23,000	
Income tax paid	(1,00,000)	
Cash before extra ordinary item	2,23,000	
Extra ordinary item		
- Voluntary separation payment paid	(1,10,000)	1,13,000
Cash flow from investing activities		
Land & building sold	1,50,000	
Plant & machinery sold	90,000	
Plant & machinery purchased	(3,50,000)	
Investment sold	70,000	
Investment purchased	(25,000)	
Pre-acquisition dividend received	5,000	(60,000)
Cash flows from financing activities		
Issue of share capital	1,00,000	
Redemption of preference share	(2,00,000)	
10% Debenture issued	1,00,000	
Proposed dividend paid	(60,000)	
Interest on debenture paid	(18,000)	(78,000)
Total (A) + (B) + (C)		(25,000)
Cash & cash equivalent at the beginning		90,000
Cash & cash equivalent at the end		65,000

Dr	Equity Share Capital A/c		Cr
To Balance c/d	6,00,000	By Balance b/d	5,00,000
	6,00,000	By Bank A/c [Bal. Fig.]	1,00,000
			6,00,000

Dr.		10% Preference Share Capital A/c		Cr.	
To Bank A/c [Bal. Fig.]	2,00,000	By Balance b/d		2,00,000	
	2,00,000			2,00,000	

Dr.		Capital Redemption Reserve A/c		Cr.	
To Balance c/d	1,00,000	By Balance b/d		-	
	1,00,000	By General Reserve A/c		1,00,000	
				1,00,000	

Dr.		Capital Reserve A/c		Cr.	
To Balance c/d	1,00,000	By Balance b/d		-	
		By Land & Building A/c (Profit on sale)		30,000	
		By Land & Building A/c (Profit on revaluation)		70,000	
	1,00,000			1,00,000	

Dr.		General Reserve A/c		Cr.	
To Voluntary Separation Payment A/c	50,000	By Balance b/d		2,50,000	
To Capital Redemption Reserve A/c	1,00,000				
To Balance c/d	1,00,000				
	2,50,000			2,50,000	

Dr.		9% Debentures A/c		Cr.	
To Balance c/d	2,00,000	By Balance b/d		-	
		By Plant & Machinery A/c		1,00,000	
		By Bank A/c		1,00,000	
	2,00,000			2,00,000	

Dr.		Provision For Taxation A/c		Cr.	
To Bank A/c	1,00,000	By Balance b/d		60,000	
To Balance c/d	95,000	By P & L Adj. A/c [Bal. Fig.]		1,35,000	
	1,95,000			1,95,000	

Dr.		Proposed Dividend A/c		Cr.	
To Bank A/c	60,000	By Balance b/d		60,000	
To Balance c/d	90,000	By P & L Adj. A/c [Bal. Fig.]		90,000	
	1,50,000			1,50,000	

TAXMAN

Dr.		Land & Building A/c		Cr.
To Balance b/d	2,00,000	By Bank A/c		1,50,000
To Capital Reserve A/c (Profit on sale)	30,000			
To Capital Reserve A/c (Profit on revaluation)	70,000	By Balance c/d		1,50,000
	<u>3,00,000</u>			<u>3,00,000</u>

Dr.		Plant & Machinery A/c		Cr.
To Balance b/d	5,00,000	By Bank A/c		90,000
To P & L Adj. A/c (Profit on sale)	40,000	By Depreciation A/c [Bal. Fig.]		1,35,000
To 9% Debenture A/c	1,00,000	By Balance c/d		7,65,000
To Bank A/c	<u>3,50,000</u>			
	<u>9,90,000</u>			<u>9,90,000</u>

Dr.		Investment A/c		Cr.
To Balance b/d	80,000	By Bank A/c		70,000
To P & L Adj. A/c (Profit on sale)	20,000	By Bank A/c (Pre-acquisition dividend)		5,000
To Bank A/c [Bal. Fig.]	<u>25,000</u>	By Balance c/d		50,000
	<u>1,25,000</u>			<u>1,25,000</u>

Dr.		Preliminary Expenses A/c		Cr.
To Balance b/d	25,000	By P & L Adj. A/c [Bal. Fig.]		15,000
		By Balance c/d		10,000
	<u>25,000</u>			<u>25,000</u>

Dr.		Voluntary Separation Payment A/c		Cr.
To Balance b/d	65,000	By General Reserve A/c		50,000
To Bank A/c [Bal. Fig.]	<u>1,10,000</u>	By Balance c/d		1,25,000
	<u>1,75,000</u>			<u>1,75,000</u>

Dr.		Interest on Debenture A/c		Cr.
To Bank A/c (2,00,000 × 9%)	18,000	By P & L Adj. A/c [Bal. Fig.]		18,000
	<u>18,000</u>			<u>18,000</u>

Dr.		Profit & Loss Adjustment A/c		Cr.
To Provision for taxation	1,35,000	By Balance b/d		50,000
To Proposed dividend	90,000	By Profit sale of plant		40,000
To Depreciation on plant & machinery	<u>1,35,000</u>	By Profit on investment		20,000

Profit & Loss Adjustment A/c		Cr.	
Dr.		By Profit before working capital changes [Bal. Fig.]	3,53,000
To Preliminary expenses written off	15,000		
To Interest on debentures	18,000		
To Balance c/d	70,000		
	<u>4,63,000</u>		<u>4,63,000</u>

Problem No. 5] From the following particulars of Bright Ltd., prepare cash flow statement as per AS-3 (Revised):

	As on 1.4.2020 (₹)	As on 31.3.2021 (₹)
Liabilities		
Equity share capital	3,00,000	3,50,000
18% Preference share capital	2,00,000	1,00,000
14% Debentures	1,00,000	2,00,000
Reserves and surplus	1,10,000	2,70,000
Creditors	70,000	1,45,000
Provision of doubtful debts	10,000	15,000
	<u>7,90,000</u>	<u>10,80,000</u>
Assets		
Fixed assets (net)	5,10,000	6,20,000
10% Investments	30,000	80,000
Cash	40,000	75,000
Debtors	1,00,000	2,10,000
Stock	1,00,000	90,000
Discount on debentures	10,000	5,000
	<u>7,90,000</u>	<u>10,80,000</u>

You are informed that during the year:

- A machine with a book value of ₹40,000 was sold for ₹25,000.
- Depreciation charged during the year was ₹70,000.
- Preference shares were redeemed on 31st March, 2021 at a premium of 5%.
- An Interim dividend @ 15% was paid on equity shares on 31st March, 2021. Preference dividend was also paid on 31st March, 2021.
- New shares and debentures were issued on 31st March, 2021.

[June 2011 (9 Marks)]

Ans.

Cash Flow Statement (Indirect Method)
For the year ended 31.3.2021

Particulars	₹	
Cash flows from operating activities		
Net profit before working capital changes	3,52,000	
(+) Decrease in Current Assets		
- Stock	10,000	
(-) Increase in Current Assets		
- Sundry debtors	(1,10,000)	
(+) Increase in Current Liabilities		
- Creditors	75,000	
(-) Decrease in Current Liabilities	-	
Cash generated from operation	3,27,000	
Income tax paid	-	
Cash before extra ordinary item	3,27,000	
Extra ordinary item	-	3,27,000
Cash flow from investing activities:		
Fixed assets sold	25,000	
Fixed assets purchased	(2,20,000)	
10% Investment purchased	(50,000)	
Interest received on investment	3,000	(2,42,000)
Cash flows from financing activities:		
Issue of share capital	50,000	
Redemption of preference share	(1,00,000)	
Premium on redemption of preference share	(5,000)	
Debenture issued	1,00,000	
Interim dividend paid	(45,000)	
Preference dividend paid	(36,000)	
Interest on debenture paid	(14,000)	(50,000)
Total (A) + (B) + (C)		35,000
Cash & cash equivalent at the beginning		40,000
Cash & cash equivalent at the end		75,000

Dr.

Equity Share Capital A/c

Cr.

To Balance c/d	3,50,000	By Balance b/d	3,00,000
	3,50,000	By Bank A/c [Bal. Fig.]	50,000
			3,50,000

Dr.		18% Preference Share Capital A/c		Cr.	
To Bank A/c [Bal. Fig.]	1,00,000	By Balance b/d			2,00,000
To Balance c/d	1,00,000				
	1,00,000				2,00,000

Dr.		Premium on Redemption of Pref. Share A/c		Cr.	
To Bank A/c (1,00,000 × 5%)	5,000	By P & L Adj. A/c [Bal. Fig.]			5,000
	5,000				5,000

Dr.		14% Debenture A/c		Cr.	
To Balance c/d	2,00,000	By Balance b/d			1,00,000
	2,00,000	By Bank A/c			1,00,000
					2,00,000

Dr.		Provision of Doubtful Debts A/c		Cr.	
To Balance c/d	15,000	By Balance b/d			10,000
	15,000	By P & L Adj. A/c [Bal. Fig.]			5,000
					15,000

Dr.		Fixed Assets A/c		Cr.	
To Balance b/d	5,10,000	By Bank A/c			25,000
To Bank A/c [Bal. Fig.]	2,20,000	By P & L Adj. A/c (Loss on sale)			15,000
		By Depreciation A/c			70,000
		By Balance c/d			6,20,000
	7,30,000				7,30,000

Dr.		10% Investment A/c		Cr.	
To Balance b/d	30,000	By Balance c/d			80,000
To Bank A/c [Bal. Fig.]	50,000				80,000
	80,000				80,000

Dr.		Discount of Debenture A/c		Cr.	
To Balance b/d	10,000	By P & L Adj. A/c [Bal. Fig.]			5,000
	10,000	By Balance c/d			5,000
					10,000

Dr.		Interim Dividend A/c		Cr.	
To Bank A/c (3,00,000 × 15%)	45,000	By P & L Adj. A/c [Bal. Fig.]			45,000
	45,000				45,000

Dr.		Preference Dividend A/c		Cr.	
To Bank A/c (2,00,000 × 18%)	36,000	By P & L Adj. A/c [Bal. Fig.]			36,000
	36,000				36,000

Dr.		Interest on Debenture A/c		Cr.	
To Bank A/c (1,00,000 × 14%)	14,000	By P & L Adj. A/c [Bal. Fig.]			14,000
	14,000				14,000

Dr.		Interest on Investment A/c		Cr.	
To P & L Adj. A/c [Bal. Fig.]	3,000	By Bank A/c (30,000 × 10%)			3,000
	3,000				3,000

Dr.		Profit & Loss Adjustment A/c		Cr.	
To Premium on redemption of preference shares	5,000	By Balance b/d		1,10,000	
To Provision for doubtful debts	5,000	By Interest on investment		3,000	
To Loss on sale of fixed assets	15,000	By Profit before working capital changes [Bal. Fig.]		3,52,000	
To Depreciation on fixed assets	70,000				
To Discount on debentures written off	5,000				
To Interim dividend	45,000				
To Preference dividend	36,000				
To Interest on debentures	14,000				
To Balance c/d	2,70,000				
	4,65,000				4,65,000

Problem No. 6] Following balances are provided by Nakul Ltd. for the year ended on 31st March, 2018 and on 31st March, 2019:

Particulars	₹ in lakh	
	31st March, 2018	31st March, 2019
Equity Share Capital	500	560
General Reserves	310	365
Surplus	165	222
8% Debentures	350	200
Goodwill	60	47

Particulars

	31st March, 2018	31st March, 2019
Land & Building	430	387
Plant & Machinery	300	330
Investment (Trading)	48	53
Trade Payables	105	122
Provision for tax	78	98
Outstanding Expenses	18	13
Inventories	165	153
Trade Receivables	171	206
Cash at Bank	52	63
Prepaid Expenses	7	5

Additional Information:

- (1) During the year, an old machine costing ₹45 lakh was sold for ₹ 21 lakh. It's written down value was ₹ 29 lakh.
- (2) Depreciation charged on plant and machinery @ 15% on the opening balance.
- (3) There were no purchases or sales of land and building during the year.
- (4) Provision for tax made during the year was ₹ 96 lakh.
- (5) During the year, premium on redemption of debentures was written-off as ₹ 15 lakh.

From the abovementioned information, you are required to prepare a Statement showing the Net Cash Flow from the Operating Activities. [June 2019 (5 Marks)]

Ans.

Statement showing net cash flow from Operating Activities:

Particulars	₹
Net profit before working capital changes	332
(+) Decrease in Current Assets	
- Inventories	12
- Prepaid Expenses	2
(-) Increase in Current Assets	
- Trade Receivables	(35)
- Investment (Trading)	(5)
(+) Increase in Current Liabilities	
- Trade Payables	17
(-) Decrease in Current Liabilities	
- Outstanding Expenses	(5)
Cash generated from operation	318
Income-tax paid	(76)
Cash before extraordinary item	242
Extraordinary item	-
Net cash flow from Operating Activities	242

Dr.

Profit & Loss Adjustment A/c

Cr.

To General Reserve	55	By Balance b/d	165
To Goodwill written off	13	By Profit before working capital changes [Bal. Fig.]	332
To Depreciation on Land & Building	43		
Plant & Machinery	45		
To Loss on Plant & Machinery	8		
To Premium on redemption of debentures	15		
To Provision for tax	96		
To Balance c/d	222	By	
	497		497

Dr.

Plant & Machinery A/c

Cr.

To Balance b/d	300	By Bank A/c	21
To Bank A/c [Bal. Fig.]	104	By P & L Adj. A/c	8
		By Depreciation A/c	45
		By Balance c/d	330
	404		404

Dr.

Provision for Tax A/c

Cr.

To Bank A/c [Bal. Fig.]	76	By Balance b/d	78
By Balance c/d	98	By P & L Adj. A/c	96
	174		174

FORECASTING FINANCIAL STATEMENTS

THEORETICAL QUESTIONS

Q. 1. Write a short note on: Importance of Financial Forecasting

Ans. Financial forecasts are a crucial part of business planning, budgeting, operations, funding that help leaders and outside stakeholders make better choices. Few important points have been pointed:

- ◆ It serves as the basis for budgeting decisions.
- ◆ It gives businesses access to cohesive reports, allowing finance departments to establish business goals that are both realistic and feasible.
- ◆ It provides management valuable insights into the way the business performed in the past and the way it will compare in the future.
- ◆ It provides a barometer for those making material financial decisions.
- ◆ It facilitates to build investor relations and show investors and creditors that your corporate has well and structured plan and is prepared for any unforeseen events impacting revenues and budgets.
- ◆ It provides customizable approach based on the core set of foundational components.
- ◆ To make accurate budget and facilitates to establish realistic business goals.
- ◆ With the help of accurate financial forecasting, problem areas can easily be traced out and company with remedial action plan can reduce the financial risk.
- ◆ Many times, accurate and authentic financial forecast reflecting higher Return on Investment and that helps to build and enhance the investor's confidence.

Q. 2. Write a short note on: Essentials of Budget

[June 2011 (3 Marks)]

Ans. Essential elements of a budget are as follows:

- ◆ Organisational structure must be clearly defined and responsibility should be assigned to identifiable units within the organisation.
- ◆ Setting of clear objectives and reasonable targets. Objectives should be in consonance with the long term plan of the organisation.
- ◆ Objectives and degree of responsibility should be clearly stated and communicated to the management or person responsible for.
- ◆ Budgets are prepared for the future periods based on expected course of actions.

- ◆ Budgets are updated for the events that were not kept into the mind while establishing budgets. Hence, budgets should be flexible enough for mid-term revision.
- ◆ The entire organisation must be committed to budgeting.
- ◆ Budgets should be quantifiable and master budget should be broken down into various functional budgets.
- ◆ Budgets should be monitored periodically. Variances from the set yardsticks (standards) should be analysed and responsibility should be fixed.
- ◆ Budgetary performance needs to be linked effectively to the reward system.

PROBLEMS & SOLUTIONS

Problem No. 1] Sunrise Ltd., has given the forecast sales from March, 2024 to September, 2024 and actual sales for January and February, 2024. Prepare a cash budget for five months, i.e., from March to July, 2024 with the following information:

(i) Sales:

2024	₹	2024	₹
January	1,60,000	June	2,00,000
February	1,40,000	July	1,80,000
March	1,60,000	August	2,40,000
April	2,00,000	September	2,00,000
May	1,60,000		

- (ii) Cash sales: 20% credit sales: 80% receivable in the third month.
 (iii) Variable expenses: 5% on turnover, time lag half month
 (iv) Commission 5% on credit sales payable in the third month.
 (v) Purchases 60% of the sales of the next third month, payment will be made in third month from purchases.
 (vi) Rent and other expenses ₹6,000 paid every month.
 (vii) Other payments: Tax - March - ₹40,000, Fixed assets purchase - May - ₹1,00,000
 (viii) Opening cash balance - ₹50,000. [June 2001 (15 Marks)]

Ans.

Cash Budget

Particulars	March	April	May	June	July
Opening cash balance (A)	50,000	54,100	65,500	8,100	65,100
Receipts:					
Cash sales	32,000	40,000	32,000	40,000	36,000
Cash received from debtors	1,28,000	1,12,000	1,28,000	1,60,000	1,28,000
Total receipts (B)	1,60,000	1,52,000	1,60,000	2,00,000	1,64,000

Particulars	March	April	May	June	July
Payments:					
Commission on sales	6,400	5,600	6,400	8,000	6,400
Variable expenses	7,500	9,000	9,000	9,000	9,500
Creditors for purchases	96,000	1,20,000	96,000	1,20,000	1,08,000
Rent and other expenses	6,000	6,000	6,000	6,000	6,000
Tax	40,000	-	-	-	-
Fixed assets purchases	-	-	1,00,000	-	-
Total payments (C)	1,55,900	1,40,600	2,17,400	1,43,000	1,29,900
Closing cash balance (A)+(B)-(C)	54,100	65,500	8,100	65,100	99,200

Note 1: Calculation of cash sale and cash received form debtors:

Particulars	Jan	Feb	Mar	April	May	June	July
Sales	1,60,000	1,40,000	1,60,000	2,00,000	1,60,000	2,00,000	1,80,000
Cash sales (20%)	32,000	28,000	32,000	40,000	32,000	40,000	36,000
Credit sales (80%)	1,28,000	1,12,000	1,28,000	1,60,000	1,28,000	1,60,000	1,44,000
Cash received form debtors out of credit sales	-	-	1,28,000	1,12,000	1,28,000	1,60,000	1,28,000
Commission (5% on credit sale)	-	-	6,400	5,600	6,400	8,000	6,400

Note 2: Calculation of payment of variable expenses:

(Time lag half month: This means half are paid in month and half are paid in next month)

Particulars	Jan	Feb	Mar	April	May	June	July
Sales	1,60,000	1,40,000	1,60,000	2,00,000	1,60,000	2,00,000	1,80,000
Variable exp. (5%)	8,000	7,000	8,000	10,000	8,000	10,000	9,000
Payment							
- Jan	4,000	4,000	-	-	-	-	-
- Feb	-	3,500	3,500	-	-	-	-
- Mar	-	-	4,000	4,000	-	-	-
- April	-	-	-	5,000	5,000	-	-
- May	-	-	-	-	4,000	4,000	-
- June	-	-	-	-	-	5,000	5,000
- July	-	-	-	-	-	-	4,500
			7,500	9,000	9,000	9,000	9,500

Note 3: Calculation of payment to creditors for purchases: Purchases are 60% of the sales of the next third month, payment will be made in third month from purchases. This means Jan purchases will be 60% of March sales and purchases made in Jan will be paid

in March. (Thus, effectively 60% of sales of that month will be paid for purchases in that month itself.)

Particulars	Jan	Feb	Mar	April	May	June	July	Aug	Sep
Sales	1,60,000	1,40,000	1,60,000	2,00,000	1,60,000	2,00,000	1,80,000	2,40,000	2,00,000
60% of sales of 3rd month	96,000	1,20,000	96,000	1,20,000	1,08,000	1,44,000	1,20,000	-	-
Payment	-	-	96,000	1,20,000	96,000	1,20,000	1,08,000	1,44,000	1,20,000

Problem No. 2] A factory is currently working at 50% of its working capacity and produces 10,000 units. At 60% working capacity, the raw materials cost increased by 2%.

At 80% working capacity, raw material cost increased by 5% and selling price falls by 5%.

At 50% working capacity, the product costs ₹ 180 per unit and sold at ₹ 200 per unit.

The cost of ₹ 180 is made up as follows:

	₹
Materials	100
Labour	30
Factory overhead (40% fixed)	30
Administrative overhead (50% fixed)	20
	180

You are required to estimate the profit of the factory when it works at 60% and 80% of its working capacity. [June 2004 (4 Marks)], [Dec. 2008 (9 Marks)],

[Dec. 2013 (4 Marks)]

Ans.

Forecast Flexible Budget

Output Particulars	12,000 60%	16,000 80%
Direct material	12,24,000	16,80,000
Direct labour	3,60,000	4,80,000
Factory overheads [Note 1]		
Variable	2,16,000	2,88,000
Fixed	1,20,000	1,20,000
Administration overheads [Note 2]		
- Variable	1,20,000	1,60,000
- Fixed	1,00,000	1,00,000
Total cost	21,40,000	28,28,000
Profit [Bal. Fig.]	2,60,000	2,12,000
Sales	24,00,000	30,40,000

Note 1: Fixed factory overheads: $30 \times 40\% = 12$; $12 \times 10,000 = 1,20,000$.

Note 2: Fixed administration overheads: $20 \times 50\% = 10$; $10 \times 10,000 = 1,00,000$.

Problem No. 3] The following information is obtained from the records of manufacturing company for a budgeted production of 10,000 units per annum:

	(₹ per unit)
Direct material	120.00
Direct labour	60.00
Variable overheads	50.00
Fixed overheads	30.00
Variable expenses (direct)	10.00
Selling expenses (10% fixed)	30.00
Administrative expenses (₹ 1,00,000 – rigid for all levels of production)	10.00
Distribution expenses (20% fixed)	10.00
Total cost of sales (per unit)	320.00

You are required to prepare a budget for production level of 6,000, 7,000 and 8,000 units respectively, showing distinctly marginal cost and total cost.

[Dec. 2004 (4 Marks)]

Ans.

Flexible Budget

Output Particulars	6,000 60%	7,000 70%	8,000 80%
Direct material	7,20,000	8,40,000	9,60,000
Direct labour	3,60,000	4,20,000	4,80,000
Variable overheads	3,00,000	3,50,000	4,00,000
Fixed overheads	3,00,000	3,00,000	3,00,000
Variable expenses	60,000	70,000	80,000
Selling expenses			
- Variable	1,62,000	1,89,000	2,16,000
- Fixed	30,000	30,000	30,000
Administrative expenses	1,00,000	1,00,000	1,00,000
Distribution expenses			
- Variable	48,000	56,000	64,000
- Fixed	20,000	20,000	20,000
Total cost	21,00,000	23,75,000	26,50,000

Note 1: Fixed overheads: $30 \times 10,000 = 3,20,000$.

Note 2: Fixed selling expenses: $30 \times 10\% = 3$; $3 \times 10,000 = 30,000$.

Note 3: Fixed distribution expenses: $10 \times 20\% = 2$; $2 \times 10,000 = 20,000$.

Problem No. 4] The cost of an article at a capacity level of 5,000 units is given in the table below under column A. For a variation of capacity above or below this level, the individual expenses vary, as indicated in column B.

	A (₹)	B (₹)	
Material cost	25,000	100%	variable
Labour cost	15,000	100%	variable
Power	1,250	80%	semi variable
Repair and maintenance	2,000	75%	semi variable
Stores	1,000	100%	variable
Inspection	500	20%	semi variable
Administrative overheads	5,000	25%	semi variable
Selling overheads	3,000	50%	semi variable
Depreciation	10,000	100%	fixed
Total	62,750		
Cost per unit	12.55		

You are required to prepare production cost budget (flexible) at 4,000 units and 6,000 units. [June 2006 (5 Marks)]

Ans.

Flexible Budget

	4,000	6,000
Output		
Material cost	20,000	30,000
Labour cost	12,000	18,000
Power		
- Variable	800	1,200
- Fixed	250	250
Repair and maintenance		
- Variable	1,200	1,800
- Fixed	500	500
Stores	800	1,200
Inspection		
- Variable	80	120
- Fixed	400	400
Administrative overheads		
- Variable	1,000	1,500
- Fixed	3,750	3,750
Selling overheads		
- Variable	1,200	1,800
- Fixed	1,500	1,500

Output		
Depreciation	4,000	6,000
Total cost	10,000	10,000
Cost per unit	53,480	72,020
Segregation of semi-variable cost:	13.37	12.003

Power: Variable cost = $1,250 \times 80\% = 1,000$; Fixed cost = $1,250 \times 20\% = 250$
 Repair & maintenance: Variable cost = $2,000 \times 75\% = 1,500$; Fixed cost = $2,000 \times 30\% = 500$
 Inspection: Variable cost = $500 \times 80\% = 410$; Fixed cost = $500 \times 80\% = 400$
 Administrative overheads: Variable = $5,000 \times 25\% = 1,250$; Fixed = $5,000 \times 75\% = 3,750$
 Selling overheads: Variable = $3,000 \times 50\% = 1,500$; Fixed = $3,000 \times 50\% = 1,500$

Calculation of variable cost per unit:
 Direct material = $\frac{25,000}{5,000} = 5$; Direct labour = $\frac{15,000}{5,000} = 3$; Stores = $\frac{1,000}{5,000} = 0.2$
 Power = $\frac{1,000}{5,000} = 0.2$; Repair & maintenance = $\frac{1,500}{5,000} = 0.3$; Inspection = $\frac{100}{5,000} = 0.02$
 Administrative overheads = $\frac{1,250}{5,000} = 0.25$; Selling overheads = $\frac{1,500}{5,000} = 0.3$

Problem No. 5] The budget manager of Jay Electrical Ltd. is preparing a flexible budget for the accounting year commencing from 1st April 2011. The company produces product – a component – Kaypee. Direct material costs ₹ 7 per unit. Direct labour averages ₹ 2.5 per hour and requires 1.60 hours to produce a one unit of Kaypee. Salesmen are paid commission of ₹ 1 per unit sold. Fixed selling and administration expenses amount to ₹ 85,000 per year.

Manufacturing overhead under specified conditions of volume has been estimated as follows:

Volume of production (units)	1,20,000	1,50,000
Expenses:	₹	₹
Indirect material	2,64,000	3,30,000
Indirect labour	1,50,000	1,87,500
Inspection	90,000	1,12,500
Maintenance	84,000	1,02,000
Supervision	1,98,000	2,34,000
Depreciation plant and equipment	90,000	90,000
Engineering services	94,000	94,000
Total manufacturing overheads	9,70,000	11,50,000

Normal capacity of production of the company is 1,25,000 units. Prepare a budget of total cost at 1,40,000 units of output. [Dec. 2010 (6 Marks)]

Ans.

Flexible Budget

No. of units	1,40,000
Particulars	₹
Direct material cost (1,40,000 × 7)	9,80,000
Direct labour cost (1,40,000 × 1.6 × 2.5)	5,60,000
Prime cost	15,40,000
Indirect material	3,08,000
Indirect labour	1,75,000
Inspection	1,05,000
Maintenance	
- Variable	84,000
- Fixed	12,000
Supervision	
- Variable	1,68,000
- Fixed	54,000
Depreciation plant and equipment	90,000
Engineering services	94,000
Total production overheads	10,90,000
Salesmen commission	
- Variable	1,40,000
- Fixed	85,000
	2,25,000
Cost of goods sold	28,55,000

PART II

FINANCIAL MANAGEMENT

(40 MARKS)

11

CHAPTER

INTRODUCTION TO FINANCIAL MANAGEMENT

THEORETICAL QUESTIONS

Q. 1. Write a short note on: Financial distress
 [June 2007 (5 Marks)], [June 2009 (5 Marks)], [Dec. 2011 (5 Marks)]

Ans. Financial distress is a condition where a company cannot meet, or has difficulty paying off, its financial obligations to its creditors, typically due to high fixed costs, illiquid assets or revenues sensitive to economic downturns. A company under financial distress can incur costs related to the situation, such as more expensive financing, opportunity costs of projects and less productive employees. Employees of a distressed firm usually have lower morale and higher stress caused by the increased chance of bankruptcy, which would force them out of their jobs.

Generally, the affairs of the firm should be managed in such a way that the total risk of business as well as financial borne by equity shareholders is minimized and is manageable, otherwise the firm will obviously face difficulties. If cash inflow is inadequate, the firm will face difficulties in payment of interest and repayment of principal. If the situation continues long enough, a time will come when the firm would face pressure from creditors. Failures of sales can also cause difficulties in carrying out production operations. The firm would find itself in a tight spot. Investors would not invest further. Creditors would recall their loans. Capital market would heavily discount its securities. Thus, the firm would find itself in a situation called distress.

Signs of Financial Distress: Poor profits indicate a company is not experiencing financial health. Struggling to break even indicates a business cannot sustain itself from internal funds and needs to raise capital externally. This raises the company's business risk and lowers its creditworthiness with lenders, suppliers, investors and banks. Limiting access to funds typically results in a company failing.

Poor sales growth or decline indicates the market is not positively receiving a company's products or services based on its business model. When extreme marketing activities result in no growth, the market may not be satisfied with the offerings, and the company may close down. Likewise, if a company offers poor quality in its products or services, consumers start buying from competitors, eventually forcing a business to close its doors.

When debtors take too much time paying their debts to the company, cash flow may be severely stretched. The business may be unable to pay its own liabilities. The risk is especially enhanced when a company has one or two major customers.

Q. 2. Distinguish between: Financial Distress & Financial Insolvency.
 [Dec. 2010 (5 Marks)], [June 2012 (5 Marks)]
 [June 2015 (5 Marks)], [June 2021 (4 Marks)]

Or

Discuss the concepts of financial distress and insolvency. [Dec. 2017 (4 Marks)]

Ans. Financial distress is a tight cash situation in which a business cannot pay the owed amounts on the due date. If prolonged, this situation can force the organization into bankruptcy or forced liquidation.

Financial insolvency means the organization can no longer meet its financial obligations with its lender or lenders as debts become due. Insolvency can lead to insolvency proceedings in which legal action will be taken against the insolvent entity, and assets may be liquidated to pay off outstanding debts.

That is the difference between illness and death!

A permanent financial distress may lead an organization to the chaotic financial insolvency state!

Q. 3 An investor suffers dilution of financial interest when he does not exercise his preemptive rights. Comment. [June 2008 (5 Marks)]

Ans. To preserve the shareholders proportionate dividend, liquidation and voting rights, pre-emptive rights are often recognized, but their existence and scope can be effected by provisions in the articles. However, Section 62 of the Companies Act, 2013 secures shareholders pre-emptive rights with regard to the further issue of share capital by the company.

As per Section 62, where at any time, a company having a share capital proposes to increase its subscribed capital by the issue of further shares, such shares shall be offered to existing shareholders in proportion to the paid-up share capital on those shares by sending a letter of offer.

Thus, existing shareholders are given option to subscribe new shares. If shareholder does not exercise his pre-emptive rights his financial interest dilutes.

Q. 4. Investment, financing and dividend decisions are interrelated. Comment.
 [Dec. 2008 (5 Marks)], [June 2021 (5 Marks)]

Ans.

Finance manager has to take following three types of decisions. These are explained below:

(a) **Investment Decisions:** Investment decisions relate to the careful selection of viable and profitable investment proposals, allocation of funds to the investment proposals with a view to obtain net present value of the future earnings of the company and to maximize its value. It is the function of a finance manager to carefully analyze the different alternatives of investment, determination of investment levels in different assets *i.e.*, fixed assets and current assets.

(b) **Finance Decisions:** One of the important functions of a finance manager is procurement of funds for the firm's investment proposals and its working capital requirements. In fund raising decisions, he should keep in view the cost of funds from various sources, determination of debt-equity mix, the advantages and disadvantages of debt

component in the capital mix, impact of taxation and depreciation in maximization of earnings per share to the equity holders, consideration of control and financial strain on the firm in determining level of gearing, impact of interest and inflation rates on the firm *etc.*

(c) **Dividend Decisions:** The dividend decisions of a finance manager are mainly concerned with the decisions relating to the distribution of earnings of the company among its equity holders and the amounts to be retained by the company.

The investment, finance and dividend decisions are interrelated to each other and, therefore, the finance manager while taking any decision, should consider the impact from all the three angles simultaneously.

Q. 5. Failure of a firm is technical if it is unable to meet its current obligations. Comment. [June 2009 (5 Marks)]

Ans. Failure of a firm is technical if it is unable to meet its current obligations. The failure could be temporary and might be remediable. When liabilities exceed assets *i.e.* the net worth becomes negative, bankruptcy, as commonly understood, arises.

Bankruptcy can be ascertained by comparing current assets and current liabilities *i.e.* working out current ratio or quick ratio. On the other hand, solvency ratios indicate long term liquidity *i.e.* the ability of the firm to discharge its term-liabilities.

Examples of solvency ratios are Debt to Equity ratio, Debt to total Funds Ratios, and Interest coverage ratio. Trend analysis should be made for the past three to five years to pick up signals of bankruptcy, if any.

Q. 6. Traditional approach of business finance considers efficient utilization of resources. Comment. [June 2010 (5 Marks)]

Ans. Financial management approach measures the scope of the financial management in various fields, which include the essential part of the finance. Financial management is not a revolutionary concept but an evolutionary. The definition and scope of financial management has been changed from one period to another period and applied various innovations.

Traditional Approach: Traditional approach is the initial stage of financial management, which was followed, in the early part of during the year 1920 to 1950. This approach is based on the past experience and the traditionally accepted methods. Main part of the traditional approach is rising of funds for the business concern.

Traditional approach consists of the following important area:

- ◆ Arrangement of funds from lending body.
- ◆ Arrangement of funds through various financial instruments.
- ◆ Finding out the various sources of funds.
- ◆ Effective utilization of own resources.

Q. 7. Liquidity and profitability are competing goals for the financial executives. Comment. [June 2013 (5 Marks)]

Ans. Liquidity is an important concept in financial management and is defined as ability of the business to meet short-term obligations. It shows the quickness with which a company can convert its assets into cash to pay what it owes in the near future.

Liquidity, as a decision criterion, is widely used in financial management. It is used for managing liquid resources or current assets or near cash assets so as to enhance the effectiveness with which they are utilized with a view to minimizing costs. It also focuses attention on the availability of funds. Enhancement of liquidity enables a corporate body to have more funds from the market.

While using liquidity as a decision criterion, the management makes use of ratios. They give a bird's eye view of the current liquidity position or shortages thereof. A company will like to have liquid resources for transaction purposes, as a precautionary measure and for speculative opportunities. Liquidity is assessed through the use of ratio analysis. Liquidity ratios provide an insight into the present cash solvency of a firm and its ability to remain solvent in the event of calamities.

Profitability as a decision criterion is another important tool in financial management for taking decisions from different angles after evaluating the performance of the company in different spheres. For example, if it becomes essential for the company to examine profit per unit of sale then it is done by estimating profitability per rupee of sales. It is used as a measure of comparison and standard of performance. Similarly, there could be other ratios.

Because different users look at the profitability of a company from different angles, they use different ratios. Short-term creditors, long-term lenders, equity shareholders, investors, etc. all are interested in profitable operations of a concern. They use the ratios which best suit their requirements. Profitability can be related to sales or to total capital employed or to net worth of the company. But then different figures for profits are taken into account.

Q. 8. Distinguish between: Profit Maximization & Wealth Maximization
[June 2013 (5 Marks)]

Ans. Following are the main differences between profit maximization & wealth maximization:

Points	Profit Maximization	Wealth Maximization
Meaning	Profit maximization ensures that firm utilizes its available resources most efficiently under conditions of competitive markets.	Wealth maximization aim at increasing the value of the stakeholders.
Aim	The main objective of a concern is to earn a larger amount of profit.	The ultimate goal of the concern is to improve the market value of its shares.
Concept	It is narrow concept.	It is boarder concept.
Risk	It ignores the risk factor.	It considers risk.
Period	Its emphasis is generally on short run projects.	It focuses on the long run picture.
Timing of returns	It ignores timing of returns.	It considers timing of returns

Q. 9. Financial management means the management of finances of a business organization in order to achieve financial objectives. Elaborate the financial objectives of a firm.
[June 2014 (5 Marks)]

Or

Profit maximization is not the only objective of Financial Management.
[Dec. 2020 (5 Marks)]

Ans. Financial management of any business firm has to set goals for itself and to interpret them in relation to the objective of the firm. Broadly, there are only two alternative objectives a business firm can pursue viz.

- (a) Profit maximization
- (b) Wealth maximization

(a) **Profit Maximization:** Profit maximization is considered as an important goal in financial decision-making in an organization. It ensures that firm utilizes its available resources most efficiently under conditions of competitive markets. But in recent years, under the changed corporate environment, profit maximization is regarded as unrealistic, difficult, inappropriate and socially not much preferred goal for business organization. Profit maximization as corporate goal is criticized by scholars mainly on the following grounds:

- ◆ It is vague conceptually.
- ◆ It ignores timing of returns.
- ◆ It ignores the risk factor.
- ◆ It may tempt to make such decisions which may in the long run prove disastrous.
- ◆ Its emphasis is generally on short run projects.
- ◆ It may cause decreasing share prices.
- ◆ The profit is only one of the many objectives and variables that a firm considers.

(b) **Wealth maximization:** It is the duty of the finance manager to see that the shareholders get good returns on the shares. Hence, the value of the share should increase in the share market. The share value is affected by many things. If a company is able to make good sales and build a good name for itself, in the industry, the company's share value goes up. If the company makes a risky investment, people may lose confidence in the company and the share value will come down. So, this means that the finance manager has the power to influence decisions regarding finances of the company. The decisions should be such that the share value does not decrease. Thus, wealth or value maximization is the most important goal of financial management.

The management of an organization maximizes the present value not only for shareholders but for all including employees, customers, suppliers and community at large. This goal for the maximum present value is generally justified on the following grounds:

- ◆ It is consistent with the object of maximizing owners economic welfare.
- ◆ It focuses on the long run picture.
- ◆ It considers risk.
- ◆ It recognizes the value of regular dividend payments.
- ◆ It takes into account time value of money.
- ◆ It maintains market price of its shares.
- ◆ It seeks growth in sales and earnings.

However, profit maximization can be part of a wealth maximization strategy. Quite often two objectives can be pursued simultaneously but the maximization of profit should never be permitted to overshadow the objectives of wealth maximization.

Q. 10. Write a short note on: Financial insolvency

[June 2014 (4 Marks)]

Ans. Financial insolvency means the organization can no longer meet its financial obligations with its lender or lenders as debts become due.

Insolvency can lead to insolvency proceedings, in which legal action will be taken against the insolvent entity, and assets may be liquidated to pay off outstanding debts.

Q. 11. Financial management is science as well as art. Comment.

[Dec. 2015 (5 Marks)]

Ans. The financial management is neither a pure science nor an art. It deals with various methods and techniques, which can be adopted, depending on the situation of business and the purpose of the decision. As a science it uses various statistical and mathematical models and computer applications for solving the financial problems relating to the firm, for example, capital investment appraisal, capital allocation and rationing, optimizing capital structure mix, portfolio management *etc.*

Along with the above, a finance manager required to apply his analytical skills in decision making. Hence, financial management is both a science as well as an art.

Q. 12. Financial sector performs basic economic function of intermediation through transformation mechanisms. Comment.

[Dec. 2015 (5 Marks)]

Ans. In any economy, the financial sector plays a major role in the mobilization and allocation of savings. Financial institutions, instruments and markets which constitute the financial sector act as conduit for the transfer of financial resources from net savers to net borrowers, *i.e.*, from those who spend less than they earn to those who spend more than they earn.

The financial sector performs this basic economic function of intermediation essentially through four transformation mechanisms:

- (1) **Liability-asset transformation:** Accepting deposits as a liability and converting them into assets such as loans.
- (2) **Size transformation:** Providing large loans on the basis of numerous small deposits.
- (3) **Maturity transformation:** Offering savers alternate forms of deposits according to their liquidity preferences while providing borrowers with loans of desired maturities.
- (4) **Risk transformation:** Distributing risks through diversification which substantially reduces risks for savers which would prevail while directly in the absence of financial intermediation.

The process of financial intermediation supports increasing capital accumulation through the institutionalization of savings and investments and as such, fosters economic growth. The gains to the real sector of the economy, therefore, depend on how efficiently the financial sector performs this basic function of financial intermediation.

Q. 13. Financial management has changed significantly in its scope and complexity in recent times. Comment.

[Dec. 2016 (5 Marks)]

Ans. Financial management in India has also changed substantially in scope and complexity in view of recent government policy. Some of the changes include introduction of new financial instruments and transactions like options and future contracts, foreign currency swaps, and interest rate swaps, GDR, Euro Issues, globalization of capital markets, finance

mix, liberalization measures taken by government *etc.* All these have emphasized the need for effective and efficient use of corporate financial resources.

Under the changed circumstances, financial management covers the following:

- (a) **Raising the funds:** Apart from Indian Public and Financial Institutions, companies have started raising funds *etc.* in the international markets by way of Euro Issues and from International Financial Institutions *etc.* Foreign currency loans are availed from foreign banks due to globalization. FII has also started participation in India's equity market due to liberalization of the economy.
- (b) **Investment Decisions:** Presently, investment decisions of firms are not confined to India but spread over globally. Foreign investors are encouraged. Hence, the competitions in India as well as from abroad have made the financial management more complex and foreign exchange management has become highly specialized area in financial management. The time value of money coupled with exchange rate fluctuations make the decision making exercise more complex and compelled the decision makers to make the use of various sophisticated management techniques like probability theory, capital rationing, linear programming, goal programming and sensitivity analysis to overcome the problems.
- (c) **Dividend Decisions:** In view of wealth maximization of firm, the internal generations of funds are not paid out by way of dividend or issue of bonus shares. They are utilized by companies in portfolio management by floating mutual funds *etc.* In order to avoid scams, the Government has established new institutions like SEBI, NSE, Stock Holding Corporation of India *etc.* It further increases the scope of financial management and makes it more complex.

However, in true sense, as such there is no change in scope of financial management in India because it still aims at maximizing value of shares. Basically, it is extension in earlier coverage.

Q. 14. Explain the concept of financial insolvency and compare it with technical bankruptcy.

[June 2017 (4 Marks)]

Ans. Insolvency is the inability of a debtor to pay its debts. Financial insolvency means failure of a firm to meet its current obligation. The failure could be temporary or might be remedial. In other words it is a situation where liabilities of the firm exceeds the assets, *i.e.*, net worth becomes negative, bankruptcy happens. That is financial insolvency.

Technical bankruptcy can be ascertained through comparing current assets and current liabilities. For this purpose, trend analysis to be made of past three to five years to pick up signals of bankruptcy if any.

Q. 15. "Finance Manager has no role to play in manufacturing company." Comment.

[June 2017 (4 Marks)]

Ans. Finance manager plays an important role in all types of company, whether it is manufacturing or a trading company. He is concerned with all financial activities of planning, raising, allocating and controlling the funds in an efficient manner. This can be done by decision making in respect of the following areas:

1. Investment decision for obtaining maximum profitability after taking the time value of money into account.

2. Financing decisions through a balanced capital structure.
3. Best utilization of fund.
4. Tax administration and tax planning.
5. Pricing volume of output, product mix, and cost volume profit analysis.
6. Cost control
7. Managing liquidity requirement and investment of surplus funds.

Q. 16. Distinguish between: Financing Decision & Dividend Decisions
[Dec. 2017 (5 Marks)]

Ans. Finance Decisions: One of the important functions of a finance manager is procurement of funds for the firm's investment proposals and its working capital requirements. In fund raising decisions, he should keep in view the cost of funds from various sources, determination of debt-equity mix, the advantages and disadvantages of debt component in the capital mix, impact of taxation and depreciation in maximization of earnings per share to the equity holders, consideration of control and financial strain on the firm in determining level of gearing, impact of interest and inflation rates on the firm etc.

Dividend Decisions: The dividend decisions of a finance manager are mainly concerned with the decisions relating to the distribution of earnings of the company among its equity holders and the amounts to be retained by the company.

The investment, finance and dividend decisions are interrelated to each other and, therefore, the finance manager while taking any decision should consider the impact from all the three angles simultaneously.

Q. 17. Elaborate the symptoms through which an analyst can get indication about the probable financial distress of firm.
[June 2018 (4 Marks)]

Ans. Following are the symptoms to get an indication of financial distress:

1. Liquidity problems.
2. Difficulty in obtaining market credit.
3. Higher prices charged by supplier of raw materials and services.
4. Difficulty in obtaining the market credit.
5. Delay in payment beyond the maturity or due date of payment.
6. Delay in realization of funds from debtors.
7. Excessive borrowing to meet the operating expenses.

TIME VALUE OF MONEY

THEORETICAL QUESTIONS

Q. 1. The time value of money concept is needed to maximize wealth. Comment.
[June 2014 (4 Marks)]

Ans. The time value of money means that worth of rupee received today is different from the worth of a rupee to be received in future. For an individual who behaves rationally ₹ 1 received in future is of less valuable than the ₹ 1 received today. Moreover, ₹ 1 received two years from now is far less valuable than the ₹ 1, received one year from now. This preference for money now, as compared to future money, is known as time preference for money. The concept of time value of money is applicable both for individuals and for business houses.

Reasons of time preference of money: The value of money received today is different from the value of money received after some time in the future. An important financial principle is that the value of money is time dependent. This principle is based on the following four reasons:

Inflation: Under inflationary conditions the value of money, expressed in terms of its purchasing power over goods and services, declines.

Risk: ₹ 1 now is certain, whereas ₹ 1 receivable tomorrow is less certain. This 'bird-in-the-hand' principle is extremely important in investment appraisal.

Personal consumption preference: Many individuals have a strong preference for immediate rather than delayed consumption. The promise of a bowl of rice next week counts for little to the starving man.

Investment opportunities: Money-like any other desirable commodity - has a price, given the choice of ₹ 100 now or the same amount in one year's time, it is always preferable to take the ₹ 100 now because it could be invested over the next year at (say) 18% interest rate to produce ₹ 118 at the end of one year. If 18 per cent is the best risk-free return available, then you would be indifferent to receiving ₹ 100 now or ₹ 118 in one year's time. Expressed another way, the present value of ₹ 118 receivable one year hence is ₹ 100.

Importance of time value of money: The concept of time value of money helps in arriving at the comparable value of the different rupee amount arising at different points of time into equivalent values of a particular point of time (Present or future).

The cash flows arising at different periods of time can be made comparable by using anyone of the following two ways.

- ◆ By compounding the present money to a future date *i.e.* by finding out the value of the present money.
- ◆ By discounting the future money to present date *i.e.* by finding out Present Value (PV) of future money

Time value of money – maximization of wealth: Discounting allows us to understand what we need to invest today if we desire to receive certain amount in future. Thus, time value of money is important concept to maximize the wealth.

Q. 2. Write a short note on: Present Value of an Annuity

Ans. The present value of an annuity is the current value of future payments from an annuity, given a specified rate of return, or discount rate. The higher the discount rate, the lower the present value of the annuity.

Key points:

- ◆ The present value of an annuity refers to how much money would be needed today to fund a series of future annuity payments.
- ◆ Because of the time value of money, a sum of money received today is worth more than the same sum at a future date.
- ◆ One can use a present value calculation to determine whether he will receive more money by taking a lump sum now or an annuity spread out over a number of years.

The formula to compute Present Value of an Annuity is as under:

$$P = \text{PMT} \times \frac{1 - [1/(1+r)^n]}{r}$$

Where,

- P = Present value of an annuity stream.
- PMT = Monetary value of each annuity payment.
- r = Interest rate (also known as discount rate).
- n = Number of periods in which payments will be made

Q. 3. Write a short note on: Use of Present Value of Perpetuity

Ans. Use of Present Value of Perpetuity:

- ◆ Perpetuity is normally utilized in preferred stocks.
- ◆ The preferred stocks tend to provide fixed dividends throughout the company life cycle.
- ◆ Since the perpetuity is an infinite amount, its present value helps in arriving at a value that has a limited amount.
- ◆ The perpetuity has its applications in real estate as well.
- ◆ If the real estate provides a sustainable income stream, then its present value is derived using the relationship of the present value of perpetuity.
- ◆ Additionally, the PV of the perpetuity forms the basis for several endowment schemes and retirement planning.
- ◆ Endowment schemes are financial protection plans that provide financial protections as well as cater to a comprehensive saving plan.

- Such schemes, if planned properly, can deliver a fixed income stream for infinite tenure.

PROBLEMS & SOLUTIONS

Problem No. 1] A sum of ₹50,000 is invested @ 12% p.a. for 6 years. What will be the present value of its maturity value, assuming a required rate of return of 10%?
[Dec. 2019 (1 Mark)]

Ans.
Future Value (FV) of ₹50,000 @ 12% after 6 years:
= $50,000 (1 + 0.12)^6$
= $50,000 \times 1.974$
= 98,700
PV of 98,700 at the end of 6th year = $98,700 \times 0.564 = 55,667$

Problem No. 2] What is the present value of the maturity value of ₹10,000 which has been given on 15% interest for five years while required rate of return is 10%?
[FV @ 15% after 5 years is 2.01136, FV @ 10% after 5 years is 1.61051]
[Dec. 2020 (1 Mark)]

Ans.
FV of ₹10,000 @ 15% after 5 years = $₹10,000 (1 + 0.15)^5 = ₹20,113.57$
Present Value of ₹20,113.57 which is to be received after 5 years = $₹20,113.57 / (1 + 0.10)^5$
= ₹12,488.94.

Problem No. 3] Find the amount of an annuity if payment of ₹50,000 is made annually for 7 years at interest rate of 14% compounded annually. [June 2021 (1 Mark)]

Ans.
 $R = 50,000, n = 7, i = 0.14$
 $FVA = 500 \times FVIFA (7, 0.14) = 50,000 \times 10.73 = 5,36,500$

Problem No. 4] Find the present value of ₹1,00,000 to be received 3 years later when rate of return is 10% p.a. compounded annually. [June 2022 (1 Mark)]

Ans.
 $x \times (1 + 0.10)^3 = 1,00,000$
 $x \times 1.331 = 1,00,000$
 $x = 75,131$

Problem No. 5] A deposited ₹1,00,000 in a bank for a period of 5 years and the rate of interest is 5% p.a. compounded annually. How much amount A will receive after 5 years?
[June 2022 (1 Mark)]

Ans.
 $FV = 1,00,000 (1 + 0.05)^5$
= $1,00,000 \times 1.2762815$
= 1,27,628

Problem No. 6] What will be the approximate present value of an annuity of ₹ 25,000 to be received at the end of each of the next 5 years, if the discount rate is 12%?
[June 2022 (1 Mark)]

Ans.

Annuity factor of 12% for 5 years = 3.60

$$25,000 \times 3.60 = 90,000$$

Problem No. 7] A bond carries a coupon rate of 12.4% p.a. compounded quarterly. What will be effective yield on the bond?
[June 2022 (1 Mark)]

Ans.

$$\begin{aligned} \text{Effective yield} &= (1 + 0.124/4)^{1 \times 4} - 1 \\ &= 1.1299 - 1 \\ &= 0.1299 \text{ i.e. } 12.99\% \end{aligned}$$

Problem No. 8] Z invested ₹ 2,40,000 at annual rate of interest of 10 per cent. What is the amount after 3 years if the compounding is done?

(a) Annually and

(b) Semi-annually

[Dec. 2020 (4 Marks)]

Ans.

(a) Annual Compounding:

$$FV_n = P(1 + i)^n$$

$$\text{Here, } P = 2,40,000$$

$$I = 10\% \text{ or } 0.10$$

$$FV_3 = 2,40,000 (1 + 0.10)^3$$

$$= 2,40,000 \times 1.1^3$$

$$= 2,40,000 \times 1.331$$

$$= ₹ 3,19,440$$

(b) Semi-annual compounding:

$$n = 3 \times 2 = 6, i = 10 \times \frac{1}{2} = 5\% \text{ or } 0.05$$

$$FV_6 = 2,40,000 \times 1.05^6$$

$$= 2,40,000 \times 1.3401$$

$$= ₹ 3,21,624$$

CAPITAL BUDGETING

THEORETICAL QUESTIONS

Q. 1. Distinguish between: NPV Method & IRR Method.
 [June 2016 (4 Marks)], [June 2019 (4 Marks)]

Or

What are the points of differences between Net Present Value and Internal Rate of Return approach used for evaluating investment proposals? Discuss.
 [Dec. 2017 (4 Marks)]

Ans. Following are the main point of distinction between NPV & IRR Method

Points	Net Present Value Method (NPV)	Internal Rate of Return Method (IRR)
Meaning	Net present value is obtained by discounting all cash outflows and inflows attributable to a capital investment project by a chosen percentage e.g., the entity's weighted average cost of capital. The method discounts the net cash flows from the investment by the minimum required rate of return, and deducts the initial investment to give the yield from the funds invested. If yield is positive, the project is acceptable. If it is negative the project is unable to pay for itself and is thus unacceptable.	Internal rate of return is a percentage discount rate used in capital investment appraisals, which brings the cost of a project and its future cash inflows into equality. It is the rate of return, which equates the present value of anticipated net cash flows with the initial outlay. The IRR is also defined as the rate at which the net present value is zero.
Cost of capital	It uses discount rate which is firms cost of capital (Ke)	It does not take into consideration cost of capital (Ke)
Calculation	This method is easy to understand and calculate.	This method is difficult to understand and calculate.
Cash inflow & outflow	This method considers cash inflow & outflow.	This Method does not take into consideration cash inflow & outflow.
Multiple rate	NPV Method does not suffer from the limitation of multiple rates.	IRR may give negative rate or multiple rates.

Q. 2. Write a short note on: Leveraged lease.

[June 2006 (5 Marks)]

Ans. A leveraged lease or leased lender is a lease in which the lessor puts up some of the money required to purchase the asset and borrows the rest from a lender.

Leveraged lease involves lessor, lessee and financier. In leveraged lease, the lessor makes a substantial borrowing, even up to 80% of the assets purchase price. He provides remaining amount – about 20% or so – as equity to become the owner. The lessor claims all tax benefits related to the ownership of the assets. Lenders, generally large financial institutions, provide loans on a non-recourse basis to the lessor. Their debt is served exclusively out of the lease proceeds. To secure the loan provided by the lenders, the lessor also agrees to give them a mortgage on the asset. Leveraged lease are called so because the high non-recourse debt creates a high degree of leverage.

Q. 3. Write a short note on: Capital Rationing.

[June 2007 (5 Marks)], [June 2010 (5 Marks)]

The device of capital rationing is adopted to control capital expenditure. Comment.
[Dec. 2013 (5 Marks)]

Ans. Capital rationing refers to a situation where a company cannot undertake all positive NPV projects, it has identified because of shortage of capital. Under this situation, a decision maker is compelled to reject some of the viable projects having positive net present value because of shortage of funds. It is known as a situation involving capital rationing.

Capital rationing may be effected through budget ceiling. A firm may resort to capital rationing when it follows the policy of financing investment proposals only by ploughing back its retained earnings. In that case, capital expenditure in a given period cannot exceed the amount of retained earnings available for reinvestment. Management may also introduce capital rationing when a department is authorized to make investments up to a limit beyond which investment decisions will be made by higher level management.

Capital rationing may result in accepting several small investment proposals then accepting a few large investment proposals so that there may be full utilization of budget ceiling. This may result in accepting relatively less profitable investment proposals if full utilization of budget is a primary consideration. Similarly, capital rationing also means that the firm foregoes the next most profitable investment falling after the budget ceiling even though it is estimated to yield a rate of return much higher than the required rate of return. Thus, capital rationing does not lead optimum results.

There are few advantages of practicing capital rationing:

- (1) **Budgeting:** The first and an important advantage is that capital rationing introduces a sense of strict budgeting of corporate resources of a company. Whenever there is an injunction of capital in the form of more borrowings or stock issuance capital, the resources are properly handled and invested in profitable projects.
- (2) **Less wastage:** Capital rationing prevents wastage of resources by not investing in each and every new project available for investment.
- (3) **Fewer projects:** Capital rationing ensures that limited numbers of projects are selected by imposing capital restrictions. This helps in keeping the number of active projects to minimum and thus manages them well.

- (4) **Higher returns on investments:** Through capital rationing, companies invest only in projects where the expected return is high, thus eliminating projects with lower returns on capital.
- (5) **Stability:** As the company is not investing in every project, the finances are not overextended. This helps in having adequate finances for tough times and ensures more stability and increase in the stock price of the company.

Q. 4. Distinction Between: Finance Lease & Operating Lease.

[Dec. 2007 (5 Marks)], [Dec. 2009 (5 Marks)]

Ans. Following are the main points of distinction between finance lease and operating lease:

Points	Finance Lease	Operating Lease
Meaning	A lease is classified as a finance lease if it transfers substantially all the risks and rewards incident to ownership.	A lease is classified as an operating lease if it does not transfer substantially all the risks and rewards incident to ownership.
Ownership	Title may or may not be transferred at the beginning of lease but may be transferred subsequently at the end of lease.	Ownership of the asset remains with the lessor for the entire lease period.
Lease Term	Lease term is generally more than or equal to estimated economic life of the asset leased.	Lease term extends to less than 75% of the projected useful life of the leased asset.
Cancellation	Financial lease may be cancelled only if both parties i.e. lessor and lessee agrees.	Operating lease may be cancelled before the expiry date.
Accounting Effect	Financial lease is treated like loan. Lessee is treated as owner and hence asset acquired under finance lease is shown as asset in the balance sheet of lessee.	Operating lease is treated generally like renting. That means, the lease payments are treated as operating expenses.
Purchase Option	Financial lease allows the lessee to have a purchase option.	In operating lease, the lessee does not have any option to buy the asset during the lease period.
Expenses	In financial lease, lessee bears insurance, maintenance and taxes.	Lessee pays only the monthly lease payment in operating lease.
Tax Benefit	In financial lease, lessee can claim tax benefit on interest and depreciation both as financial lease is treated like a loan.	Since operating lease is as good as renting, lease payment is considered as expense and thus tax benefit only on lease payment is available.
Running Cost	In a financial lease, running cost and administration expenses are has to be borne by lessee.	In operating lease, no running or administration costs are to be borne by lessee.

Q. 5. Distinction Between: Lease & Hire Purchase.
 [Dec. 2007 (5 Marks)], [Dec. 2009 (5 Marks)],
 [Dec. 2016 (4 Marks)], [Dec. 2021 (4 Marks)]

Ans. Following are the main points of distinction between lease & hire purchase:

Points	Lease	Hire Purchase
Meaning	A lease is a contractual arrangement calling for the lessee (user) to pay the lessor (owner) for use of an asset.	Hire purchase is a contract in which goods are delivered and the price is allowed to be paid in installments on the condition that property (ownership) in goods will be passed only on payment of all the installments.
Transfer of ownership	In leasing it is only in financial lease, the ownership will get transferred. While in operating lease, the ownership is not transferred.	In Hire purchase, the agreement is entered for the transfer of ownership after a fixed period.
Type of agreement	Leasing is bipartite agreement, involving lessor and lessee.	Hire purchase is a tripartite agreement involving the seller, finance company and the hire purchaser.
Depreciation	In finance lease depreciation is claimed by the lessee whereas in operating lease depreciation claimed by lessor.	Depreciation is claimed by the hire purchaser.

Q. 6. Distinguish between: Net Present Value & Profitability Index.
 [June 2008 (5 Marks)]

Ans. Following are the main point of distinction between net present value & profitability index:

Points	Net Present Value (NPV)	Profitability Index (PI)
Meaning	Net present value is obtained by discounting all cash outflows and inflows attributable to a capital investment project by a chosen percentage e.g., the entity's weighted average cost of capital.	Profitability index is an investment appraisal technique calculated by dividing the present value of future cash flows of a project by the initial investment required for the project.
Formula	$\text{NPV} = \text{Total present value} - \text{Initial investment}$	$\text{Profitability Index} = \frac{\text{Total present value}}{\text{Initial investment}}$
Acceptance of project	As per this method, project having positive NPV are selected.	As per this method, project having profitability index above one are selected.

Q. 7. Under capital rationing, the standard Net Present Value (NPV) decision rule no longer holds true. Comment. [Dec. 2009 (5 Marks)], [June 2012 (5 Marks)]

Ans. The term capital rationing refers to the situation where the funds available to a firm are limited. The implicit assumption within the NPV decision rule does not hold true i.e. a firm cannot accept all positive NPV projects because of shortage of capital.

Capital rationing is of two types – Hard and Soft, characterized by sources of capital expenditure constraints. Hard capital rationing occurs when constraints are externally imposed while soft rationing occurs, when constraints are imposed internally by management. In capital rationing, NPV decision rule does not hold true, so it has to be modified. In single period rationing condition, the simple NPV decision rule is replaced by feasibility set approach or benefit cost ratio analysis and in multi-period capital rationing the optimal solution is obtained through linear programming.

Q. 8. Risk and uncertainty is quite inherent in capital budgeting. Comment.

[June 2011 (5 Marks)]

What are the risk and uncertainty in capital budgeting decisions?

[Dec. 2015 (4 Marks)]

Ans. Risk analysis gives management better information about the possible outcomes that may occur so that management can use their judgement and experience to accept an investment or reject it. Since risk analysis is costly, it should be used relatively in costly and important projects.

Risk and uncertainty are quite inherent in capital budgeting decisions. This is so because investment decisions and capital budgeting are actions of today which bear fruits in future which is unforeseen. Future is uncertain and involves risk. The projection of probability of cash inflows made today is not certain to be achieved in the course of future. Seasonal fluctuations and business cycles both deliver heavy impact upon the cash inflows and outflows projected for different project proposals. The cost of capital which offers cut-off rates may also be inflated or deflated under business cycle conditions. Inflation and deflation are bound to effect the investment decision in future period rendering the degree of uncertainty more severe and enhancing the scope of risk.

Technological developments are other factors that enhance the degree of risk and uncertainty by rendering the plants or equipments obsolete and the product out of date. Tie up in the procurement in quantity and/or the marketing of products may at times fail and frustrate a business unless possible alternative strategies are kept in view. All these circumstances combined together affect capital budgeting decisions.

It is therefore necessary to allow discounting factor to cover risk. One way to compare risk in alternative proposals is the use of Standard Deviation.

Lower standard deviation indicates lower risk.

However, wherever returns are expressed in revenue terms the coefficient of variation gives better measurement for risk evaluation.

Q. 9. Capital rationing does not always lead to optimum results. Comment.

[Dec, 2011 (5 Marks)], [Dec. 2016 (4 Marks)]

Ans. A Firm may fix the maximum amount that can be invested in capital projects, during a given period of time. The firm then attempts to select a combination of investment proposals that will be within the specific limits providing maximum profitability and put them in descending order according to their rate of return.

Capital rationing may result in accepting several small investment proposals than a few large investment proposals so that there may be full utilization of budgeted amount. This may result in accepting relatively less profitable investment proposals if full utilization of budget is a primary consideration.

Similarly, capital rationing may also mean that the firm foregoes the next most profitable investment following after the budget ceiling even though it is estimated to yield a rate of return much higher than the required rate of return. Thus capital rationing does not always lead to optimum results.

Q. 10. Distinguish between: Risk Evaluation & Sensitivity Analysis.

[Dec. 2012 (5 Marks)]

Ans. Risk analysis gives management better information about the possible outcomes that may occur so that management can use their judgement and experience to accept an investment or reject it.

In relation to capital budgeting, sensitivity analysis deals with the consideration of sensitivity of the NPV to different variables contributing to the NPV.

Q. 11. Internal Rate of Return (IRR) of a project is that rate where Net Present Value (NPV) is zero. Comment.

[June 2013 (5 Marks)]

Ans. The Internal Rate of Return (IRR) of a capital budgeting project is the discount rate at which the Net Present Value (NPV) of a project **equals zero**. The IRR decision rule specifies that all independent projects with an IRR greater than the cost of capital should be accepted. When choosing among mutually exclusive projects, the project with the highest IRR should be selected (as long as the IRR is greater than the cost of capital).

Acceptance rule: The use of IRR, as a criterion to accept capital investment decision involves a comparison of IRR with the required rate of return known as cut-off-rate. If IRR is greater than cut-off-rate, the project should be accepted. If IRR is less than the cut-off rate, the project is rejected. In case, the IRR is equal to the cut-off-rate, the firm is indifferent.

Merits:

- (1) It considers the time value of money.
- (2) It takes into account the total cash inflows and cash outflows.
- (3) It is easier to understand

Demerits:

- (1) It does not use the concept of desired rate of return, whereas it provides the rate of return, which is indicative of the profitability of investment proposal.
- (2) It involves tedious calculations, based on trial and error method.
- (3) It produces multiple rates, which can be confusing.
- (4) Projects selected based on higher IRR may not be profitable.
- (5) Unless the life of the project can be accurately estimated, assessment of cash flows cannot be correctly made.
- (6) Single discount rate ignores the varying future interest rates.

Q. 12. Write a short note on: Sensitivity analysis in capital budgeting.

[Dec. 2013 (5 Marks)], [June 2015 (4 Marks)]

Ans. A sensitivity analysis is a technique used to determine how different values of an independent variable impact a particular dependent variable under a given set of

assumptions. This technique is used within specific boundaries that depend on one or more input variables.

In relation to capital budgeting, sensitivity analysis deals with the consideration of sensitivity of the NPV to different variables contributing to the NPV.

Steps to find out sensitivity of NPV to different variables:

- (1) Cash flows for the project are identified. NPV is calculated on the basis of these cash flows.
- (2) Variables which have a bearing on the cash flows of project are identified. Some of these variables may be selling price, operating costs, discounting factor, initial cash outflows etc.
- (3) Perform the calculation for variables to find out how much change is required. For example, if one has to calculate sensitivity of NPV to selling price, then calculation has to be done to see that how much change in selling price will make the NPV of the project zero.

Advantages of sensitivity analysis:

- (a) It compels the decision maker to identify the variables which affect the cash flow forecasts. This helps him in understanding the investment project in totality.
- (b) It indicates the critical variables for which additional information may be obtained. The decision maker can consider actions which may help in strengthening the "weak spots" in the project.
- (c) It helps to expose inappropriate forecasts and thus guides the decision maker to concentrate on relevant variables.

Disadvantages of sensitivity analysis:

- (i) It does not provide clear cut results. The terms 'optimistic' and 'pessimistic' could mean different things to different people.
- (ii) It fails to focus on the interrelationship between underlying variables. For example sales volume may be related to price and cost but we analyze each variable differently.
- (iii) Sensitivity analysis does not eliminate risk. It merely measures the resilience level of identified variables to change in assumption.

Q. 13. There are number of statistical/mathematical techniques of risk evaluation in capital budgeting. Comment. [Dec. 2014 (5 Marks)]

Ans. Following statistical/mathematical techniques of risk evaluation are used in capital budgeting:

1. Certainty Equivalent Approach
2. Probability Assignment
3. Expected Net Present Value
4. Standard Deviation
5. Coefficient of Variation
6. Sensitivity Analysis
7. Simulation
8. Probability Distribution Approach

9. Normal Probability Distribution
10. Linear Programming

Q. 14. Distinguish between: Capital Budgeting & Capital Rationing.
[Dec. 2014 (4 Marks)], [Dec. 2015 (5 Marks)], [Dec. 2020 (4 Marks)]

Ans. Following are the main points of distinction between capital budgeting & capital rationing:

Points	Capital Budgeting	Capital Rationing
Meaning	Capital budgeting is the process by which the firm decides which long-term investments to make.	Capital rationing refers to a situation where a company cannot undertake all positive NPV projects, it has identified because of shortage of capital.
Acceptance of projects	As per capital budgeting process project having positive is selected.	Under capital rationing situation, a decision maker is compelled to reject some of the viable projects having positive net present value because of shortage of funds.
Emphasis	It emphasizes on profitable projects.	It emphasizes on effective utilization of short funds.

Q. 15. Distinguish between: Sensitivity Analysis & Scenario Analysis.
[June 2014 (4 Marks)]

Ans. In relation to capital budgeting, sensitivity analysis deals with the consideration of sensitivity of the NPV to different variables contributing to the NPV.

Sensitivity analysis takes care of only one or two variable which is at times inadequate. This limitation is partially overcome by what is known as scenario analysis, where scenario of certain prices, cost and other variables are created and the financial parameters are computed.

Q. 16. Write a short note on: Sale and lease back. [Dec. 2015 (5 Marks)]

Ans. A sale and leaseback constitutes an arrangement where the seller of an asset leases back the same asset from the purchaser.

The lease arrangement is made immediately after the sale of the asset with the amount of the payments and the time period specified. Essentially, the seller of the asset becomes the lessee and the purchaser becomes the lessor in this arrangement.

A leaseback arrangement is useful when companies need to untie the cash invested in an asset for other investments, but the asset is still needed in order to operate. Leaseback deals can also provide the seller with additional tax deductions. The lessor benefits in that they will receive stable payments for a specified period of time.

Q. 17. Distinguish between: 'Finance lease' and 'sale and lease back'.
[Dec. 2015 (5 Marks)]

Ans. Following are the main points of distinction between finance lease and sale and lease back:

Points	Finance Lease	Sale and lease back
Meaning	A lease is classified as a finance lease if it transfers substantially all the risks and rewards incident to ownership.	A sale and leaseback constitutes an arrangement where the seller of an asset leases back the same asset from the purchaser.
Real owner	Real owner of asset become lessor after leasing the asset.	Real owner who is bought the asset once sale it and by taking on lease again become lessee of the asset.
Lease rentals	Real owner receive the lease rentals.	Real owner pays the lease rentals.
Lease term	In finance lease, the lease term is for the major part of the economic life of the asset even if title is not transferred.	In sale and leaseback, the lease term may be for part of the economic life of the asset.

Q. 18. Payback period is suitable to measure liquidity of a project rather than its profitability. Comment. [June 2016 (5 Marks)]

Ans. The payback period represents the amount of time that it takes for a capital budgeting project to recover its initial cost. The use of the payback period as a capital budgeting decision rule specifies that all *independent* projects with a payback period less than a specified number of years should be accepted. When choosing among *mutually exclusive* projects, the project with the quickest payback is preferred.

Merits:

- (1) It is simple to apply, easy to understand.
- (2) In case of capital rationing, a company is compelled to invest in projects having shortest payback period.
- (3) This method is most suitable when the future is very uncertain. The shorter the payback period, the less risky is the project. Therefore, it can be considered as an indicator of risk.
- (4) This method gives an indication to the prospective investors specifying when their funds are likely to be repaid.
- (5) It does not involve assumptions about future interest rates.
- (6) Ranking projects according to their ability to repay quickly may be useful to firms when experiencing liquidity constraints. They will need to exercise careful control over cash requirements.

Demerits:

- (1) It does not indicate whether an investment should be accepted or rejected, unless the Payback period is compared with an arbitrary managerial target.
- (2) The method ignores cash generation beyond the payback period and this can be seen more a measure of liquidity than of profitability.
- (3) It fails to take into account the timing of returns and the cost of capital.
- (4) The traditional payback approach does not consider the salvage value of an investment. It fails to determine the payback period required in order, to recover the initial outlay if things go wrong.

- (5) This method makes no attempt to measure a percentage return on the capital invested and is often used in conjunction with other methods.

Q. 19. Distinguish between: Term Finance & Operating Lease Finance.
[Dec. 2017 (5 Marks)]

Ans. Following are the main points of distinction between term finance and operating lease:

Points	Term Finance	Operating Lease Finance
Fixed financial cost	The fixed financial cost is interest.	The fixed financial cost is lease rent.
Interest/ Lease payments	Interest is generally cheaper than lease rental.	Lease payments are normally higher than the cost of interest.
Repayment	Repayment is of the loan amount plus interest at a predetermined amortization schedule.	The repayment obligation is of lease rent.
Use	In case of term finance the funds can be used for any asset subject to the agreement terms.	The lease rentals are paid only for the specific leased asset.
Leverage	It increases financial leverage.	It increases operating leverage.
Depreciation	Depreciation can be claimed on funded assets.	Depreciation cannot be claimed on leased assets.
Property	The assets financed become the borrower's property.	The assets financed remain the property of lessor.

Q. 20. Distinguish between: Internal Rate of Return (IRR) & Accounting Rate of Return (ARR).
[June 2018 (4 Marks)], [Dec. 2021 (4 Marks)]

Ans. Following are the main points of distinction between IRR & ARR method:

Points	Internal Rate of Return (IRR)	Accounting Rate of Return (ARR)
Meaning	Internal rate of return is a percentage discount rate used in capital investment appraisals, which brings the cost of a project and its future cash inflows into equality. It is the rate of return, which equates the present value of anticipated net cash flows with the initial outlay. The IRR is also defined as the rate at which the net present value is zero.	The Accounting rate of return method employ the normal accounting technique to measure the increase in profit expected to result from an investment by expressing the net accounting profit arising from the investment as a percentage of that capital investment
Firm/Period	IRR is firm specific.	ARR is period specific.
Calculation	It is difficult to calculate.	It is easy to calculate.
Time value of money	It takes into account Time Value of Money	It does not take into account Time Value of Money.
Emphasis	It emphasizes on cash flow.	It emphasizes on profits.

Q. 21. Despite of several objections, cost of capital is used as the basis to evaluate investments.
[Dec. 2018 (5 Marks)]

Ans. Despite several objections, cost of capital is used as the basis to evaluate investments whose cash flows are perfectly correlated with the cash flows from the company's present assets. With perfect co-relation between the two sets of cash flows, risk is the same. But, if the timing of the cash flows is not same, the same discount rate cannot be used for both investments. But weighted average cost of capital represents averaging of all the risks of the company and can be used to evaluate investments in as much as the same manner as that of the pay-back method. It gives some insights and guidance and to that extent it is good to be used.

Present value of an investment can be computed using a weighted average cost of capital and this can be compared with present values calculated using the other discount rates. It may be that an investment with a positive present value should be rejected because of its risk characteristics or that an investment with a negative present value using the weighted average cost of capital should be accepted. All this will differ from situation to situation and case to case.

Nevertheless, evaluation of projects involving capital investments requires some basis which could serve as the minimum rate of return which a project should generate. In such cases, weighted cost of capital could serve as an accepted discounting rate for evaluating investment decisions as no project will be acceptable which does not generate funds equal or greater to the cut-off rate represented by weighted cost.

Q. 22. Distinguish between: Sensitivity Analysis and Risk Analysis.

[Dec. 2018 (4 Marks)]

Ans. Both sensitivity analysis and risk analysis are the methods of evaluating risks in a capital budgeting decision. The two approaches have their own advantages and limitations and are used along with each other for risk analysis.

Sensitivity Analysis: Projects are sensitive to fluctuation in values of critical variables like costs of inputs, cost of funds and prices of outputs. It is important to examine how sensitive is the project to fluctuations in the values of these variables because the basic assumptions taken for projections of balance sheet, cash flow statements for future years have an element of uncertainty.

Different projects may, however, get affected differently from changes in the assumption of cost and return items. Sensitivity analysis helps in finding out that how sensitive is the project to these fluctuations.

Sensitivity analysis involves identification of crucial variable relating to costs and returns, specification of alternative values of the crucial variables and re-computation of the NPV and IRR by using the alternative values.

A project, which is highly sensitive to even small fluctuations in cost and price, is considered to be a risky project for financing.

Risk Analysis: Even though through sensitivity analysis and scenario analysis techniques, some of the uncertainties in the project are taken care, both these types of analysis have limitation that they have deterministic values for the variables.

In a significant improvement over these methods, under objective risk analysis, probabilistic analysis is done by identification of key risk variables, finding out values of each

risk variable, assigning probabilities to each of the risk variables, using these values for risk analysis and finding out the probability of negative outcome of the project, i.e. what is the probability that the NPV of the project will be negative.

The risk analysis adds valuable information to the project analysis and it is an important tool in this respect but to take up investment or not depends on the risk taking capacity of the entrepreneur which varies from person to person. Therefore, it is judgmental in nature.

Q. 23. Sensitivity analysis does not make any decision of itself. Comment.
[Dec. 2021 (5 Marks)]

Ans. Samuel and Wilkes in "Management of Company Finance" opine that sensitivity analysis does not make any decisions of itself. It is a practicable procedure that presents derived information in particularly revealing way. The method is usually applied to each possible project as it arises. It could be used for the total company activities-existing investments plus new proposals, but such a grand exercise would detract from the essential simplicity of the method and not be warranted for all the largest projects. When all the sensitivity data have been assembled a judgment has then to be made as to whether the picture presented is acceptable or not.

In this decision the management may subjectively estimate the likelihood of each scenario, or they may play safe and consider only the worst possibilities. It is unlikely that the market as a whole would have access to the same volume and quality of information as that given by the sensitivity analysis and this would have to be done by intelligent guess too. A sensitivity analysis is particularly helpful in large projects that would have a substantial impact on the company's operations.

PROBLEMS & SOLUTIONS

CAPITAL BUDGETING - BASIC

Problem No. 1] Modern Electronics wants to take up a new project of the manufacture of an electronic device which has good market. Further details are given below:

Cost of the project as estimated:

	(₹ in lakh)	
Land	2.00	(will be incurred at the beginning of year 1)
Building	3.00	(will be incurred at the end of year 1)
Machinery	10.00	(will be incurred at the end of year 2)
Working capital	5.00	(will be incurred at the beginning of year 3)
	<u>20.00</u>	

The project will go into production from the beginning of year 3 and will be operational for a period of 5 years. The annual working results are estimated as follows:

	(₹ in lakh)
Sales	20.00
Less: Variable cost	8.00

Fixed cost (excluding depreciation)
Depreciation of Assets

4.00

2.00

At the end of the operational period, it is expected that the fixed assets can be sold for ₹5 lakh (without any profit)

Cost of capital of the firm is 10%. Applicable tax rate is 50%.

Year	PV	Year	PV
1	0.909	5	0.621
2	0.826	6	0.564
3	0.751	7	0.513
4	0.683	8	0.467

You are required to evaluate the proposal, by working out the net present value and advise the firm.
[Dec. 2013 (10 Marks)]

Ans.

Calculation of CFAT:

Particulars	₹ in Lakh
Sales	20.00
(-) Variable cost	(8.00)
(-) Fixed cost	(4.00)
(-) Depreciation on machinery	(2.00)
Profit before tax	6.00
(-) Tax @ 50%	(3.00)
PAT	3.00
(+) Depreciation	2.00
CFAT	5.00

₹ in Lakh

Year	Cash Flow	PV Factor 10%	PV
3 to 7	5.00	3.133	15.665
7 *	5.00	0.513	2.565
7 **	5.00	0.513	2.565
Total present value of cash inflow			20.795
0	2.00	1.000	2.000
1	3.00	0.909	2.727
2	10.00	0.826	8.260
2	5.00	0.826	4.130
Total present value of cash outflow			17.117
Net present value (NPV)			3.678

* Salvage value

** Working capital recovered

Analysis: NPV is positive, project can be accepted.

Problem No. 2] Snowman Enterprises is considering the possibility of manufacturing a particular component which at present is being bought from outside.

The manufacture of the component would call for an investment of ₹7,50,000 in a new machine besides an additional investment of ₹50,000 in working capital. The life of the machine would be 10 years with a salvage value of ₹50,000. The estimated savings (before tax) would be ₹1,80,000 per annum. The income-tax rate is 50%. The company's required rate of return is 10%. Depreciation is provided on straight line basis.

Suggest the firm whether this investment be made or not. *Show your workings.*

[June 2015 (4 Marks)]

Ans.

Calculation of initial investment:

Equipment cost	7,50,000
Additional working capital requirement	50,000
Net initial investment	8,00,000

Calculation of CFAT:

Estimated savings	1,80,000
(-) Depreciation $(7,50,000 - 50,000/10)$	(70,000)
EBIT	1,10,000
(-) Tax @ 50%	(55,000)
PAT	55,000
(+) Depreciation	70,000
CFAT	1,25,000

Calculation of NPV:

Year	CFAT	PV Factor 10%	PV
1 to 10	1,25,000	6.145	7,68,125
10	*50,000	0.386	19,300
10	**50,000	0.386	19,300
Total present value			8,06,725
(-) Initial investment			(8,00,000)
Net Present Value (NPV)			6,725

* Salvage value realized.

** Working capital realized.

Analysis: Since, NPV is positive, the firm may purchase machine.

Problem No. 3] Saswat Dairy Ltd. (SDL) is planning to buy dairy plant costing ₹ 400 lakh. Milk Board provides 10% subsidy on the capital cost. It can process milk to produce cheese with the capacity of 1,800 tonnes per annum. The selling price of cheese is taken as ₹ 50 per kg. The management expects the life of the plant at 8 years and the depreciation shall be computed using straight line method. However, the plant can be sold at ₹ 50 lakh at the end of its useful life. The utilization of plant is expected as below:

Years	1	2	3	4 to 8
Capacity Utilization	60%	70%	80%	90%

The variable cost constituting primarily of the raw material (milk) is placed at 40% while the fixed expenses are ₹ 300 lakh per annum. The company pays tax @ 35%. The additional working capital required is ₹ 100 lakh.

Find the following —

- Cash flows of the project from Year 0 to Year 8
- NPV of the project
- IRR of the project
- Payback period and
- Should the project be accepted based on NPV and IRR. [June 2015 (16 Marks)]

Ans. Calculation of initial investment:

(₹ in Lakh)

Dairy plant cost	400
(-) Subsidy from Milk Board	(40)
Additional working capital requirement	100
Net initial investment	460

Selling price per tonne = $50 \times 1,000 = 50,000$ i.e. 0.5 Lakh

Calculation of CFAT:

(₹ in Lakh)

Particulars	1	2	3	4 to 8
Capacity Utilization	60%	70%	80%	90%
Production in tonne	1,080	1,260	1,440	1,620
Sales (in lakh)	540	630	720	810
(-) Variable cost	(216)	(252)	(288)	(324)
(-) Fixed cost	(300)	(300)	(300)	(300)
(-) Depreciation $(360 - 50)/8$	(38.75)	(38.75)	(38.75)	(38.75)
EBT	(14.75)	39.25	93.25	147.25
(-) Tax @ 35%	-	*(8.575)	(32.6375)	(51.5375)
PAT	(14.75)	30.675	60.6125	95.7125
(+) Depreciation	38.75	38.75	38.75	38.75
CFAT	24	69.425	99.3625	134.4625

* Tax for 2nd year = $39.25 \times 35\% = 13.7375$

Tax benefit for loss of year 1 = $14.75 \times 35\% = 5.1625$

Net tax for 2nd year after setting of tax benefit for loss of first year = $13.7375 - 5.1625 = 8.575$
 Additional cash flow at the end of 8th year from sale after tax = $50(1 - 0.35) = 32.5$
 CFAT for 8th year = $134.4625 + 32.5 + 100^{**} = 266.9625$. **** Working capital released.**

Calculation of payback period:

Year	CFAT	Cumulative CFAT
1	24	24
2	69.425	93.425
3	99.3625	192.7875
4	134.4625	327.2500
5	134.4625	461.7125
6	134.4625	596.1750
7	134.4625	730.6375
8	266.9625	997.6000

$$\text{Payback period} = 4 \text{ years} + \frac{460 - 327.2500}{134.4625} \times 12$$

$$= 4 \text{ years \& 11.85 months}$$

Calculation of NPV & IRR:

Year	CFAT	PV Factor		Present Value	
		10%	20%	10%	20%
1	24	0.909	0.833	21.8160	19.9920
2	69.425	0.826	0.694	57.3451	48.1810
3	99.3625	0.751	0.579	74.6212	57.5309
4	134.4625	0.683	0.482	91.8379	64.8109
5	134.4625	0.621	0.402	83.5012	54.0539
6	134.4625	0.565	0.335	75.9713	45.0450
7	134.4625	0.513	0.279	68.9793	37.5150
8	266.9625	0.467	0.233	124.6715	62.2023
Total present value				598.7435	389.3310
(-) Initial investment				(460)	(460)
Net Present Value (NPV)				138.7435	(70.669)

$$\text{IRR} = 10 + \frac{138.7435}{138.7435 + 70.669} \times 10$$

$$= 10 + \frac{138.8056}{209.4125} \times 10$$

$$= 10 + 6.63$$

$$= 16.63\%$$

Acceptance of Project based on NPV and IRR:

- (1) As per NPV rule, if the NPV of the project is positive project is accepted. If the NPV is negative, project will be rejected. In given problem cost of capital is not given, so if the at company's cost of capital NPV is positive project is accepted.
- (2) As per IRR Rule, if the company's cost of capital is less than IRR, project can be accepted. IRR for the given project is 16.63%, thus if the company's cost of capital less below 16.63%, project can be accepted otherwise rejected.

Problem No. 4] ABC Chemicals Ltd. is considering two mutually exclusive proposals. Your advice is sought for choice between the two options under consideration:

- (i) Purchase of petrol truck
(ii) Purchase of a battery powered truck

	Year	Petrol truck	Battery powered truck
Purchase cost (₹)	0	1,50,000	2,50,000
Operating cost (₹)	1	24,000	12,000
	2	34,000	12,000
	3	29,000	12,000
	4	31,000	12,000
	5	-	12,000

Assume an investment incentive of 100% initial depreciation allowance and a 30% incidence of corporate tax. No depreciation is allowed on subsequent years. Taxes are promptly paid. A return of 10% after tax as investment incentives is required. You are required to find out equivalent cost for two options.

[Dec. 2015 (4 Marks)]

Ans.

Calculation of net cash outflow of petrol truck:

Particulars	1	2	3	4	5
Operating cost	24,000	34,000	29,000	31,000	-
Tax benefit on operating cost	(7,200)	(10,200)	(8,700)	(9,300)	-
Tax benefit on depreciation	*(45,000)	-	-	-	-
Net cash outflow	(28,200)	23,800	20,300	21,700	-

* As an investment incentive 100% depreciation allowance available at the end of first year. Tax benefit on depreciation = $1,50,000 \times 100\% \times 30\% = 45,000$

Calculation of net cash outflow of battery powered truck:

Particulars	1	2	3	4	5
Operating cost	12,000	12,000	12,000	12,000	12,000
Tax benefit on operating cost	(3,600)	(3,600)	(3,600)	(3,600)	(3,600)
Tax benefit on depreciation	** (75,000)	-	-	-	-
Net cash outflow	(66,600)	8,400	8,400	8,400	8,400

** Tax benefit on depreciation = $2,50,000 \times 100\% \times 30\% = 75,000$

Present value of cash outflow of petrol truck:

Year	Cash outflow	PV Factor 10%	PV
0	1,50,000	1.000	1,50,000
1	(28,200)	0.909	(25,634)
2	23,800	0.826	19,659
3	20,300	0.751	15,245
4	21,700	0.683	14,821
5	-	0.621	-
			1,74,091

$$\text{Equivalent PV of annual cash outflow} = \frac{1,74,091}{3.791} = 45,922$$

Present value of cash outflow of battery powered truck:

Year	Cash outflow	PV Factor 10%	PV
0	2,50,000	1.000	2,50,000
1	(66,600)	0.909	(60,539)
2	8,400	0.826	6,938
3	8,400	0.751	6,308
4	8,400	0.683	5,737
5	8,400	0.621	5,216
			2,13,660

$$\text{Equivalent PV of annual cash outflow} = \frac{2,13,660}{3.791} = 56,360$$

Analysis: As equivalent PV of annual cash outflow of petrol truck is less, it is advised to go with option of purchase of petrol truck.

Problem No. 5] A company has two alternatives for selecting a new machine to replace its existing machine. The cash flows under the two alternatives are as follows:

	Machine-A (₹ in lakh)	Machine-B (₹ in lakh)
Year 0 cash outflow	25	40
Year 1 cash inflow	Nil	10
Year 2 cash inflow	5	14
Year 3 cash inflow	20	16
Year 4 cash inflow	14	17
Year 5 cash inflow	14	15

You are required to appraise the two alternatives using net present value and profitability index methods. The cost of capital of the company is 15%.

[Dec. 2015 (8 Marks)]

Ans.

Calculation of net present value:

(₹ in Lakh)

Year	CFAT		PV Factor 15%	Present Value	
	Machine-A	Machine-B		Machine-A	Machine-B
1	0	10	0.870	0	8.700
2	5	14	0.756	3.780	10.584
3	20	16	0.658	13.160	10.528
4	14	17	0.572	8.008	9.724
5	14	15	0.497	6.958	7.455
Total present value				31.906	46.991
- Initial investment				(25)	(40)
Net Present Value (NPV)				6.906	6.991

Analysis: As NPV of Machine-B is higher, it should be selected.

Calculation of Profitability Index:

$$\text{Profitability Index} = \frac{\text{Total Present Value}}{\text{Initial Investment}}$$

$$\text{Machine-A} = \frac{31.906}{25} = 1.276$$

$$\text{Machine-B} = \frac{46.991}{40} = 1.175$$

Analysis: As Profitability Index of Machine-A is higher, it should be selected.

Problem No. 6] Aman Ltd. is producing a single Product-X and presently commanding a market share of 15%. The following cost details are provided:

	₹	₹
Sales price		100
Less: Material	40	
Labour	20	
Overheads	10	70
Contribution		30
Less: Fixed cost		20
Profit		10

The current volume of sale of Product-X is 15,000 units. It has now been estimated that the market share can be increased up to 25% from next year for 3 years if the following promotional expenses are incurred in the corresponding previous year:

For Year-1 ₹1,00,000

For Year-2 ₹75,000

For Year-3 ₹50,000

There will be an increase in fixed cost by ₹30,000 when production is increased from present level. The company wants to achieve 15% return and would apply discounted cash flow technique for evaluation.

You are required to evaluate the impact of above situation on profitability when —

(i) Market share is increased by 25% and

(ii) Market share is increased by 20%

[Dec. 2015 (8 Marks)]

Ans.

Calculation of increase in production:

If market share is increased by 25%

15% - 15,000 units

25% - ?

$$\frac{25 \times 15,000}{15} = 25,000$$

Increase on production = 25,000 - 15,000 = 10,000

If market share is increased by 20%

15% - 15,000 units

20% - ?

$$\frac{20 \times 15,000}{15} = 20,000$$

Increase on production = 20,000 - 15,000 = 5,000

Calculation of incremental cash flow if market share is increased by 25%:

Particulars	Year 0	Year 1	Year 2	Year 3
Contribution (10,000 × 30)	-	3,00,000	3,00,000	3,00,000
Promotional expenses	(1,00,000)	(75,000)	(50,000)	-
Fixed cost	-	(30,000)	(30,000)	(30,000)
Net cash inflow	(1,00,000)	1,95,000	2,20,000	2,70,000

It is assumed that promotional expense will be incurred at the beginning of each period. (If you incur promotional expense at the beginning then only benefit will be received throughout the year)

Calculation of present value:

Year	Cash inflow	PV Factor	PV
0	(1,00,000)	1.000	(1,00,000)
1	1,95,000	0.870	1,69,650
2	2,20,000	0.756	1,66,320
3	2,70,000	0.658	1,77,660
			4,13,630

Calculation of incremental cash flow if market share is increased by 20%:

Particulars	Year 0	Year 1	Year 2	Year 3
Contribution (5,000 × 30)	-	1,50,000	1,50,000	1,50,000
Promotional expenses	(1,00,000)	(75,000)	(50,000)	-
Fixed cost	-	(30,000)	(30,000)	(30,000)
Net cash inflow	(1,00,000)	45,000	70,000	1,20,000

Calculation of present value:

Year	Cash inflow	PV Factor	PV
0	(1,00,000)	1.000	(1,00,000)
1	45,000	0.870	39,150
2	70,000	0.756	52,920
3	1,20,000	0.658	78,960
			71,030

Analysis: As NPV under both options is positive after taking into account fixed costs as well as promotional expense, profitability position of the firm will improve if market share is increased in both cases.

Problem No. 7] Calculate the payback period, accounting rate of return, net present value and internal rate of return for the following investment:

Year	Cash flow
	₹
0	(30,000)
1	4,000
2	10,000
3	20,000
4	11,000

The rate for Discounted Cash Flow (DCF) calculation is 12%. Accounting profits are the same as cash flow except that the initial expenditure should be depreciated over 4 years; there is no resale value at year 4. [Dec. 2015 (10 Marks)]

Ans.
Tax rate is not given in problem, hence Cash Flow = CFAT.

Calculation of payback period:

Year	CFAT	Cumulative CFAT
1	4,000	4,000
2	10,000	14,000
3	20,000	34,000
4	11,000	45,000

$$\text{Payback period} = 2 \text{ years} + \frac{30,000 - 14,000}{20,000} \times 12$$

$$= 2 \text{ years \& 9.6 months}$$

Calculation of NPV & IRR:

Year	CFAT	PV Factor		Present Value	
		12%	20%	12%	20%
1	4,000	0.893	0.833	3,572	3,332
2	10,000	0.797	0.694	7,970	6,940
3	20,000	0.712	0.579	14,240	11,580
4	11,000	0.636	0.482	6,996	5,302
Total present value				32,778	27,154
(-) Initial investment				(30,000)	(30,000)
Net Present Value (NPV)				2,778	(2,846)

$$\text{IRR} = 12 + \frac{2,778}{2,778 + 2,846} \times 8$$

$$= 12 + \frac{2,778}{5,624} \times 8$$

$$= 12 + 3.95$$

$$= 15.95\%$$

Problem No. 8] Aalia Ltd. has two alternative projects under consideration. Project-A requires a capital outlay of ₹1,60,000 and Project-B needs ₹1,80,000. Both are estimated to provide a cash flow for 5 years; Project-A: ₹45,000 per year and Project-B: ₹58,000 per year. The cost of capital is 10%. Show which project is preferable from the view point of net present value? [June 2016 (4 Marks)]

Ans.

Calculation of net present value:

Year	CFAT		PV Factor 10%	Present Value	
	Project-A	Project-B		Project-A	Project-B
1 to 5	45,000	58,000	3.791	1,70,595	2,19,878
(-) Initial investment				(1,60,000)	(1,80,000)
Net Present Value (NPV)				10,595	39,878

Analysis: Since, NPV of Project-B is higher, it should be selected.

Problem No. 9] The following are the data on capital expenditure of a project being evaluated by management of Vivaan Limited:

Annual cost savings	₹40,000
Useful life	4 years

Internal Rate of Return 15%

Profitability Index 1.064

From the above information find out the following by assuming that salvage value is zero:

- (i) Cost of project (iii) Cost of capital
(ii) Payback period (iv) Net present value

[June 2009 (10 Marks)], [June 2017 (4 Marks)]

Ans. Calculation of Cost of project:

Annual cost saving = Cash inflow = ₹40,000

Useful life = 4 years

IRR = 15%

At 15% IRR, total present value of cash inflow is equal to initial cash outlay.

Total present value of cash inflow @ 15% for 4 years is $2.855 = 40,000 \times 2.855 = 1,14,200$

Thus, Project cost = ₹1,14,200.

Calculation of payback period:

Year	CFAT	Cumulative CFAT
1	40,000	40,000
2	40,000	80,000
3	40,000	1,20,000
4	40,000	1,60,000

Payback period:

$$\text{Project A} = 2 \text{ years} + \frac{1,14,200 - 80,000}{40,000} \times 12$$

$$= 2 \text{ years \& 10.26 months}$$

Calculation of cost of capital:

$$\text{Profitability Index} = \frac{\text{Total Present Value}}{\text{Initial Investment}}$$

$$1.064 = \frac{\text{Total Present Value}}{1,14,200}$$

Total Present Value = 1,21,509

Year	Cash Flow	PV Factor	PV
1 to 4	40,000	x	40,000x

$$40,000x = 1,21,509$$

$$x = 3.038$$

Looking at present value table, discount factor for 4 years is 3.038.

Hence, Cost of capital = 12%

Calculation of Net present value:

$$\text{Net present value} = 1,21,509 - 1,14,200 = 7,309$$

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Problem No. 10] A company has to choose from two mutually exclusive project proposals A and B. Which require cash outlays of ₹8,35,000 and ₹9,00,000 respectively. The current yield on government bonds is 7% and this is used as risk free rates.

The expected net cash flows from the two projects are as under:

Year end	Project A	Project B
1	₹3,60,000	₹4,05,000
2	₹3,50,000	₹3,60,000
3	₹2,50,000	₹3,50,000

Which of these projects should be accepted?

[Dec. 2017 (4 Marks)]

Ans.

Year	CFAT		PV Factor 7%	PV	
	Project A	Project B		Project A	Project B
1	3,60,000	4,05,000	0.935	3,36,600	3,78,675
2	3,50,000	3,60,000	0.873	3,05,550	3,14,280
3	2,50,000	3,50,000	0.816	2,04,000	2,85,600
Total present value				8,46,150	9,78,555
(-) Initial Investment				(8,35,000)	(9,00,000)
Net present value				11,150	78,555

Analysis: The Company should select Project B.

Problem No. 11] "A" Ltd. issues ₹1,000 optionally convertible debentures at a coupon of 12% convertible into 50 equity shares on a date exactly 5 years before maturity. The date for optional conversion has come. The shares are quoting at ₹25. Investors expect 10% p.a. return on a 5 years debenture. Will you suggest conversion?

[Dec. 2017 (4 Marks)]

Ans.

Period	Cash Flow	PV Factor 10%	PV
1 to 5 Interest	120	3.791	454.92
5 Redemption	1,000	0.621	621.00
Value of debenture			1,075.92

Value of equity share = $50 \times 25 = 1,250$.

As value of equity share is more than fair value of debenture; it is suggested to convert debenture into equity share.

Problem No. 12] Santra Ltd. is planning to replace an old lathe machine with a new one. The production manager has shortlisted the two alternative types of lathe machines, and provided the following information:

Particulars	Alternative I	Alternative II
Name of supplier	Apple Ltd.	Grapes Ltd.
Cost of machine	₹100 lakh	₹50 lakh

Resultant savings in cost:

Year 1	₹ 10 lakh	
Year 2	₹ 35 lakh	₹ 20 lakh
Year 3	₹ 25 lakh	₹ 20 lakh
Year 4	₹ 40 lakh	₹ 20 lakh
Economical life in years	4 years	4 years

You are required to suggest which lathe machine to be purchased, by using the discounted payback period method, and considering the applicable discount rate of 10%.
 [June 2018 (4 Marks)]

Ans.

Year	Cash flow		PV Factor 10%	PV		Cumulative PV	
	I	II		I	II	I	II
1	10,00,000	20,00,000	0.909	9,09,000	18,18,000	9,09,000	18,18,000
2	35,00,000	20,00,000	0.826	28,91,000	16,52,000	38,00,000	34,70,000
3	25,00,000	20,00,000	0.751	18,77,500	15,02,000	56,77,500	49,72,000
4	40,00,000	20,00,000	0.683	27,32,000	13,66,000	84,09,500	63,38,000

Discounted payback period:

For Alternative I saving in cost (indirect cash flow) discounted at 10% do not recover ₹ 100 lakh; hence 'Alternative I' do not payback the amount invested in business.

$$\text{Alternative II} = 3 \text{ years} + \frac{50,00,000 - 49,72,000}{13,66,000} \times 12$$

$$= 3 \text{ years \& } 0.25 \text{ month}$$

Analysis: Santra Ltd. should go with Alternative II.

Problem No. 13] Boat Ltd. has a proposal for manufacturing Mechanised Boats. The project would involve cost of plant at ₹ 750 lakh, installation cost of ₹ 150 lakh and working capital of ₹ 175 lakh. The annual capacity of the plant is to manufacture 30,000 Boats. Price per Boat is ₹ 30,000, with a variable cost ratio of 70%. Cash-fixed cost in the first year, including promotion expenditure of ₹ 180 lakh, is ₹ 630 lakh and is thereafter ₹ 450 lakh each year. The company expects that the plant's capacity utilization over its estimated useful life of five years is as under:

Year	1	2	3	4	5
Capacity utilization %	25	40	50	75	100

Terminal value of the project is ₹ 95 lakh. If the hurdle rate is 12%, and tax rate is 30%, can the project be accepted? While evaluating, you have to keep in mind that the company has other sources of income against which the losses, if any, from this project can be set off. Project implementation cost to be considered on year 0, and cash flow to start from year 1. Consider PVF rate up to three decimal points.
 [Dec. 2018 (8 Marks)]

Ans.

Calculation of initial outlay:

Particulars	(₹ in lakh)
Cost of plant	750
Installation cost	150
Working capital	175
Total	1,075

Calculation of depreciation: In absence of specific information SLM method of depreciation is assumed.

$$\text{Depreciation} = \frac{750 + 150 - 95}{5} = \frac{805}{5} = 161 \text{ lakh}$$

Statement showing net cash outflow for the various years:

(₹ in lakh)

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
Capacity utilization	25%	40%	50%	75%	100%
No. of Boats	7,500	12,000	15,000	22,500	30,000
Sales	2,250	3,600	4,500	6,750	9,000
(-) Variable cost @ 70%	(1,575)	(2,520)	(3,150)	(4,725)	(6,300)
Contribution	675	1,080	1,350	2,025	2,700
(-) Cash fixed cost	(630)	(450)	(450)	(450)	(450)
(-) Depreciation	(161)	(161)	(161)	(161)	(161)
Profit before tax	(116)	469	739	1,414	2,089
(-) Tax @ 30%	-	*(105.9)	(221.7)	(424.2)	(626.7)
Profit after tax	(116)	363.1	517.3	989.8	1,462.3
(+) Depreciation	161	161	161	161	161
Cash flow after tax (CFAT)	45	524.1	678.3	1,150.8	1,623.3
(+) Terminal value					95
(+) Working capital					175
Net CFAT					1,893.3

$$*469 - 116 \times 30\% = 105.9$$

Calculation of NPV:

Year	Net CFAT	PV Factor @ 12%	PV
1	45	0.893	40.19
2	524.1	0.797	417.71
3	678.3	0.712	482.74
4	1,150.8	0.636	731.91
5	1,893.3	0.567	1,073.50
			2,746.05
(-) Initial investment			(1,075)
Net Present Value (NPV)			1,671.05

Analysis: NPV is positive. Project can be accepted.

Problem No. 14] Roma Ltd. has to choose one of the machines from two mutually exclusive machines.

Two proposals are: Machine Rani and Machine Prince. The required amount of cash outlays for Machine Rani is ₹ 8,35,000; while for Machine Prince is ₹ 9,00,000. The current rate of yield on Government of India's bond is 7%, and the management is of the opinion to use the same as discount rate. The expected net cash inflows by deployment of both the machines are as under:

Year end	Machine Rani	Machine Prince
1	₹ 3,60,000	₹ 4,05,000
2	₹ 3,50,000	₹ 3,60,000
3	₹ 2,50,000	₹ 3,50,000

You have to advise the management with respect to selection of either Machine Rani or Machine Prince. The Present value interest factor for the years 1, 2 and 3 are 0.9346, 0.8734 and 0.8163 respectively, for 7% discount rate.

[June 2019 (5 Marks)]

Ans.

Year	Machine		PV Factor 7%	Present Value	
	Rani	Prince		Rani	Prince
1	3,60,000	4,05,000	0.935	3,36,600	3,78,675
2	3,50,000	3,60,000	0.873	3,05,550	3,14,280
3	2,50,000	3,50,000	0.816	2,04,000	2,85,600
Total present value				8,46,150	9,78,555
(-) Initial investment				(8,35,000)	(9,00,000)
Net Present Value (NPV)				11,150	78,555

Decision: Machine Prince should be selected.

Problem No. 15] The following investment proposals are competing for selection. The Profitability Index (PI) of each of these proposals is also given:

Project	Initial Cash Outlay (₹)	PI
A.	25,000	1.13
B	35,000	1.11
C	40,000	1.15
D	30,000	1.08

If the budgeted fund is ₹ 60,000. Select the most profitable projects, which completely utilize the available funds.

[Dec. 2020 (8 Marks)]

Ans.

Ranking of Proposals based on Profitability Index (PI):

Project	Initial Cash Outlay (₹)	PI	Ranking
A	25,000	1.13	2
B	35,000	1.11	3
C	40,000	1.15	1
D	30,000	1.08	4

Although C ranks first it does not utilize the entire available fund. On the other hand C and A cannot be selected simultaneously as they would require a total fund of ₹ 65,000. But if A and B are selected available fund is completely utilized. Thus, the mix A and B will be the most profitable one and would maximize the present value. This is shown below:

Calculation of NPV:

Project	Amount (₹)	Profitability Index	Cash Inflow (2) × (3)	NPV (4) - (2)
(1)	(2)	(3)	(4)	(5)
C	40,000	1.15	46,000	6,000
A	25,000	1.13	28,250	3,250
A & B	25,000 + 35,000 = 60,000	1.13 & 1.11	28,250 + 38,850 = 67,100	7,100
A & D	25,000 + 30,000 = 55,000	1.13 & 1.08	28,250 + 32,400 = 60,650	5,650

Investment in Project A & B is most profitable as NPV is highest i.e. ₹ 7,100 and total investment in both project is also within the budget constraint i.e. ₹ 60,000.

CAPITAL BUDGETING - LEASE OR BUY DECISIONS

Problem No. 16] Apple Ltd. has decided to invest in earth-moving equipment. The equipment costs ₹ 5,50,000. The company can take it on lease for 7 years at ₹ 90,000 p.a. payable in advance.

Alternatively, it can borrow at 20%. The asset can be written-off over 6 years under straight line method of depreciation and this is allowed under tax. The asset's useful life is 7 years. In the terminal year the asset will be sold for a net value of ₹ 40,000. The applicable tax rate is 30%.

Should the company borrow for buying the equipment or take it on lease?

[June 2016 (8 Marks)]

Ans.

Evaluation of loan option:

Calculation of installment amount:

$$\frac{\text{Investment cost}}{\text{Annuity factor of 20\% for 7 years}} = \frac{5,50,000}{3.605} = 1,52,566$$

Calculation of principal & interest:

Year	Installment	Principal	Interest @ 20%	Balance
0	-	-	-	5,50,000
1	1,52,566	42,566	1,10,000	5,07,434
2	1,52,566	51,079	1,01,487	4,56,355
3	1,52,566	61,295	91,271	3,95,060
4	1,52,566	73,554	79,012	3,21,506
5	1,52,566	88,265	64,301	2,33,241
6	1,52,566	1,05,918	46,648	1,27,323
7	1,52,566	1,27,323	25,243	-

PV Factor = $20(1 - 0.3) = 14\%$

Calculation of net present value of cash outflow:

Year	Principal	Interest	Deprecia- tion	Tax benefit	Net cash outflow	PV Fac- tor 14%	PV
1	42,566	1,10,000	72,857	54,857	97,709	0.877	85,691
2	51,079	1,01,487	72,857	52,303	1,00,263	0.769	77,102
3	61,295	91,271	72,857	49,238	1,03,328	0.675	69,746
4	73,554	79,012	72,857	45,561	1,07,005	0.592	63,347
5	88,265	64,301	72,857	41,147	1,11,419	0.519	57,826
6	1,05,918	46,648	72,857	35,852	1,16,714	0.456	53,222
7	1,27,323	25,243	72,857	29,430	1,23,136	0.400	49,254
7	-	-	-	-	(40,000)	0.400	(16,000)
Total present value of cash outflow							4,40,188

Evaluation of lease option:

Calculation of net present value of cash outflow:

Year	Lease Rental	Tax benefit	Net cash outflow	PV Factor 14%	PV
0	90,000	-	90,000	1.000	90,000
1 to 6	90,000	27,000	63,000	3.889	2,45,007
7	-	27,000	(27,000)	0.400	(10,800)
Total present value of cash outflow					3,24,207

Analysis: Present value of cash outflow is less for leasing option and hence company is advised to take earth-moving equipment availing lease option.

Problem No. 17] An equipment costing ₹4,00,000, with a life of 4 years, can be leased for 4 years for payment of ₹1,20,000 per year at the end of the year. Alternatively, there is an option to borrow ₹4,00,000 and buy the equipment. The borrowed fund will carry interest @ 6% payable on the outstanding balance at the close of each year.

The principal borrowed sum is to be repaid in 4 equal instalments
 Depreciation to be considered at 25% on the original cost per annum.
 Corporate tax to be considered at 30% for this exercise.
 A fair return of 10% after tax is expected on the business.
 Present your choice with comparative analysis.

[Dec. 2017 (8 Marks)]

Ans.

Evaluation of loan option:

Calculation of installment amount:

$$\frac{\text{Investment Cost}}{\text{Annuity factor of 6\% for 4 years}} = \frac{4,00,000}{3.465} = 1,15,440$$

Calculation of principal & interest:

Year	Installment	Principal	Interest @ 6%	Balance
0	-	-	-	4,00,000
1	1,15,440	91,440	24,000	3,08,560
2	1,15,440	96,926	18,514	2,11,634
3	1,15,440	1,02,742	12,698	1,08,892
4	1,15,440	1,08,892	6,548	-

Calculation of net present value of cash outflow:

Year	Principal	Interest	Depreciation	Tax benefit	Net cash outflow	PV Factor 10%	PV
1	91,440	24,000	1,00,000	37,200	78,240	0.909	71,120
2	96,926	18,514	1,00,000	35,554	79,886	0.826	65,986
3	1,02,742	12,698	1,00,000	33,809	81,631	0.751	61,305
4	1,08,892	6,548	1,00,000	31,964	83,476	0.683	57,014
Total present value of cash outflow							2,55,425

Evaluation of lease option:

Calculation of net present value of cash outflow:

Year	Lease Rental	Tax benefit	Net cash outflow	PV Factor 10%	PV
1 to 4	1,20,000	36,000	84,000	3.1699	2,66,272

Analysis: Present value of cash outflow is less for loan option and hence company is advised to buy equipment availing loan option.

CAPITAL BUDGETING - ASSET REPLACEMENT DECISIONS

Problem No. 18] A product is currently manufactured in a machine that is not fully depreciated for tax purpose and has a book value of ₹60,000 (it was bought for ₹1,20,000 six years ago). The cost of the product is as under.

	(Unit cost ₹)
Direct cost	24
Indirect labour	8
Other variable overheads	16
Fixed overheads	16
	<hr/>
	64

Normally 10,000 units of the product are produced. It is expected that the old machine can be used indefinitely into the future, after suitable repairing estimated to cost ₹40,000 annually is carried out.

There is an offer for a new machine with latest improved technology at ₹3,00,000 after trading off the old existing machinery for ₹30,000. The projected cost of the product will then be as under:

	(Unit cost ₹)
Direct cost	14
Indirect labour	12
Other variable overheads	12
Fixed overheads	20
	<hr/>
	58

The fixed overheads are allocations from other departments plus the depreciation of the plant and machinery.

The old machine can be sold in the open market for ₹40,000. The new machine will last for 10 years at the end of which it will have a salvage value of ₹20,000. Assume rate of corporate tax at 50%. For tax purpose the cost of the new machine and that of the old one may be depreciated in 10 years. The minimum rate of return expected is 10%. It is also expected that the future demand of the product will remain steady at 10,000 units. Advise whether the new machine should be purchased. Ignore capital gains tax.

Present values of ₹1 at 10% for 10 years are:

Year	1	2	3	4	5	6	7	8	9	10
PV	0.909	0.826	0.751	0.683	0.621	0.564	0.513	0.467	0.424	0.386

[Dec. 2008 (20 Marks)]

Ans.

Calculation of initial investment in new machine:

Price of new machine after trading off the old machinery = 3,00,000

Calculation of value for depreciation purpose:

Price of new machine after trading off the old machinery	3,00,000
(+) Value of old plant	30,000
(-) Salvage value	(20,000)
	<hr/>
	3,10,000

$$\text{Depreciation on new machinery} = \frac{3,10,000}{10} = 31,000$$

$$\text{Depreciation on old machinery} = \frac{60,000}{6} = 10,000$$

$$\text{Variable cost per unit under existing machine} = 24 + 8 + 16 = 48$$

$$\text{Variable cost per unit under new machine} = 14 + 12 + 12 = 38$$

Calculation of incremental cash inflow if new machine is purchased:

<i>Cash inflow:</i>	
Saving in variable cost (10,000 × 10)	1,00,000
Saving in annual repair of old machine	40,000
	1,40,000
(-) Incremental depreciation (31,000 - 10,000)	(21,000)
EBT	1,19,000
(-) Tax @ 50%	(59,500)
PAT	59,500
(+) Depreciation	21,000
CFAT	80,500

Calculation of NPV:

Year	Cash inflow	PV Factor	PV
1 to 10	80,500	6.144	5,06,880
10	*10,000	0.386	3,860
Present value of cash inflow			5,10,740
(-) Initial investment			(3,00,000)
NPV			2,10,740

* Salvage value after tax = 20,000 (1 - 0.5) = 10,000

Analysis: Since NPV is positive; existing machine can be replaced by new machine.

Problem No. 19] Exacta Ltd. is considering the replacement of its existing machine by a new one which is expected to cost ₹2,70,000 with a life of 5 years and salvage value being ₹20,000. The machine will yield annual cash revenue of ₹5,70,000 and annual cash expenses of ₹2,96,000.

The existing machine has a book value of ₹92,000 and can be sold for ₹46,000 today. It has a remaining useful life of 5 years. Cash revenues will be ₹4,50,000 and associated cash expenses will be ₹3,20,000 p.a. The existing machine will have a salvage value of ₹4,600 at the end of 5 years.

Exacta Ltd. is in a 35% tax bracket and writes off depreciation @ 25% p.a. on WDV method. Exacta Ltd. has a target debt-equity ratio of 20%. The company in the past has raised debt at 12% and it can now be raised at 10%. Exacta Ltd. follows

the dividend discount model to estimate the cost of equity capital. Last year the company paid a dividend of ₹ 1.85 per share. The current market price of the company's equity share is ₹ 20 per share. A growth rate of 8% p.a. is anticipated. (Ignore capital gain tax)

Required -

- (i) Investment required on incremental basis.
- (ii) Incremental depreciation per year.
- (iii) Weighted average cost of capital.
- (iv) Computation of present worth factors.
- (v) Before tax incremental cash flow based on revenue and expenses.
- (vi) Incremental terminal cash flow.
- (vii) Computation of NPV.
- (viii) Should the new machine be acquired? Why?

[June 2008 (20 Marks)]

Ans.

- (i) Calculation of investment required on incremental basis:

Cost of new machine	2,70,000
(-) Cash inflow on sale of old machine	(46,000)
Net investment in new machine	2,24,000

- (ii) Calculation of incremental depreciation per year:

Year	Existing Machine	New Machine	Incremental Depreciation
1	23,000	67,500	44,500
2	17,250	50,625	33,375
3	12,938	37,969	25,031
4	9,703	28,477	18,774
5	7,277	21,357	14,080

- (iii) Computation of weighted average cost of capital:

$$K_e = \frac{D_1}{P_0} + g \quad D_1 = D_0 (1 + g)$$

$$= \frac{1.998}{20} + 0.08 \quad = 1.85 (1 + 0.08)$$

$$= 0.1799 \quad = 1.998$$

$$K_e = 0.1799 \text{ i.e. } 17.99\% \text{ say } 18\%$$

$$K_d = I (1 - t)$$

$$= 10 (1 - 0.35)$$

$$= 6.5\%$$

Types of capital	%	Cost of Capital	Product
Equity	80%	18%	1,440
Debt	20%	6.5%	130
	100%		1,570

$$\text{WACC} = \frac{1,570}{100} = 15.7\%$$

(iv) Computation of present worth factors (i.e. PV Factors):

Year	PV Factors 15.7%
1	0.864
2	0.747
3	0.646
4	0.558
5	0.482

(v) Calculation of incremental terminal cash flow:

Particulars	Existing Machine	New Machine
Cash revenue	4,50,000	5,70,000
(-) Cash expense	(3,20,000)	(2,96,000)
Cash earnings	1,30,000	2,74,000

Increase in cash earnings = 1,44,000

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
Cash inflow	1,44,000	1,44,000	1,44,000	1,44,000	1,44,000
(-) Incremental depreciation	(44,500)	(33,375)	(25,031)	(18,774)	(14,080)
EBT	99,500	1,10,625	1,18,969	1,25,226	1,29,920
(-) Tax @ 35%	(34,825)	(38,719)	(41,639)	(43,829)	(45,472)
PAT	64,675	71,906	77,330	81,397	84,448
(+) Depreciation	44,500	33,375	25,031	18,774	14,080
CFAT	1,09,175	1,05,281	1,02,361	1,00,171	98,528

(vi) Computation of NPV:

Year	CFAT	PV Factors 15.7%	PV
1	1,09,175	0.864	94,327
2	1,05,281	0.747	78,645
3	1,02,361	0.646	66,125
4	1,00,171	0.558	55,895
5	98,528	0.482	47,490
5	*15,400	0.482	7,423
Total present value			3,49,905
(-) Initial investment			(2,24,000)
NPV			1,25,905

$$\begin{aligned}
 * \text{ Incremental terminal cash flow} &= \text{Salvage value of new machine} - \text{Salvage value of old machine} \\
 &= 20,000 - 4,600 \\
 &= 15,400
 \end{aligned}$$

(vii) **Analysis:** Since incremental NPV is positive, the company is suggested to replace the existing machine.

Problem No. 20] Excel Operations Ltd. is proposing to replace its fully depreciated machine by a new one costing ₹ 1,50,000. The current market value of old machine is ₹ 20,000 and the salvage value after six years is zero. The post-tax salvage value of the new machine after six years is expected to be ₹ 16,000. With the use of the new machine, sales are expected to increase by ₹ 20,000 per annum and operating expenses to decrease by ₹ 12,000 per annum. If the company follows 30% WDV depreciation policy, has a marginal cost of capital of 12% and attracts a marginal tax rate of 30%, should the old machine be replaced or not based on six years calculations?

P.V. factors @ 12% for six years are as follows:

Year	1	2	3	4	5	6
PV Factors	0.8929	0.7972	0.7118	0.6355	0.5674	0.5066

[Dec. 2021 (8 Marks)]

Ans.

Calculation of cash outflow of investment:

Cash outlay	1,50,000
(-) Cash from sale of old machine	(20,000)
Initial investment	1,30,000

Calculation of CFAT:

Year	1	2	3	4	5	6
Increase in sale	20,000	20,000	20,000	20,000	20,000	20,000
Saving in operating cost	12,000	12,000	12,000	12,000	12,000	12,000
(-) Depreciation	(45,000)	(31,500)	(22,050)	(15,435)	(10,805)	(7,563)
Incremental PBT	(13,000)	500	9,950	16,565	21,195	24,437
(-) Tax @ 30%	*3,900	(150)	(2,985)	(4,970)	(6,359)	(7,331)
Incremental PAT	(9,100)	350	6,965	11,595	14,836	17,106
(+) Depreciation	45,000	31,500	22,050	15,435	10,805	7,563
CFAT	35,900	31,850	29,015	27,030	25,641	24,669

* Tax benefit due to loss.

Cash flow on disposal of new machine at the end of 6th year:

Purchase cost	1,50,000
(-) Depreciation for 1 to 6 years	(1,32,353)

	17,647
(-) Loss on sale [Bal. Fig.]	(1,647)
Sale price	16,000
(+) Tax benefit on loss on sale (1,647 × 30%)	494
Net cash flow on sale	16,494

Calculation of NPV:

Year	Cash flow	PV Factor @ 12%	PV
1	35,900	0.8929	32,055
2	31,850	0.7972	25,391
3	29,015	0.7118	20,653
4	27,030	0.6355	17,178
5	25,641	0.5674	14,549
6	24,669	0.5066	12,497
6	16,494	0.5066	8,356
Total present value			1,30,679
(-) Initial Investment			(1,30,000)
Net Present Value (NPV)			679

Decision: As NPV is positive, the machine should be replaced.

CAPITAL BUDGETING - RISK ANALYSIS

Problem No. 21] A firm has an investment proposal, requiring an outlay of ₹ 40,000. The investment proposal is expected to have 2 years economic life with no salvage value. In Year-1, there is a 0.4 probability that cash flow after tax (CFAT) will be ₹ 25,000 and 0.6 probability that CFAT will be ₹ 30,000. The probabilities assigned to CFAT for the Year-2 are as follows:

If CFAT = ₹ 25,000		If CFAT = ₹ 30,000	
₹	Probability	₹	Probability
12,000	0.2	20,000	0.4
16,000	0.3	25,000	0.5
22,000	0.5	30,000	0.1

The firm uses a 10% discount rate for this type of investment.

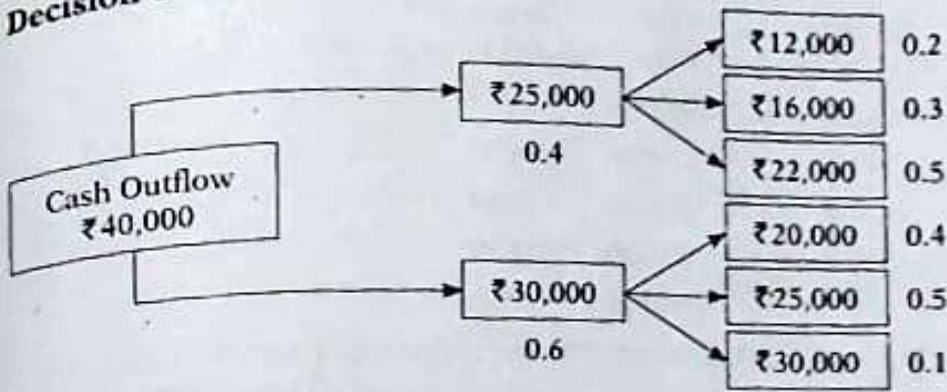
You are required to -

- (i) Present the above information in the form of a decision tree.
- (ii) Find out the NPV under (i) the worst outcome; and (ii) under the best outcome.
- (iii) Find out the profitability or otherwise of the above investment proposal.

[June 2006 (20 Marks)]

Ans.

(i) Decision Tree:



Net present value of cash flows:

Combination	CFAT ₁	PV Factor	PV ₁	CFAT ₂	PV Factor	PV ₂
A	25,000	0.909	22,725	12,000	0.826	9,912
B	25,000	0.909	22,725	16,000	0.826	13,216
C	25,000	0.909	22,725	22,000	0.826	18,172
D	30,000	0.909	27,270	20,000	0.826	16,520
E	30,000	0.909	27,270	25,000	0.826	20,650
F	30,000	0.909	27,270	30,000	0.826	24,780

Table continued....

Total PV (PV ₁ +PV ₂)	Initial investment	NPV	Joint Probabilities	Expected NPV
32,637	40,000	-7,363	0.08	-589
35,941	40,000	-4,059	0.12	-487
40,897	40,000	897	0.20	179
43,790	40,000	3,790	0.24	910
47,920	40,000	7,920	0.30	2,376
52,050	40,000	12,050	0.06	723
				3,112

(ii) If worst outcome is realized, the NPV of the project would be -7,363. If best outcome is realized, the NPV of the project would be 12,050.

(iii) Analysis: Since expected NPV is positive, project can be accepted.

Problem No. 22] A company is considering two mutually exclusive projects. The company uses certainty equivalent approach. Estimated cash flows and certainty equivalents for each project are as follows:

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Year	Project-1		Project-2	
	Cash Flow	Certainty Equivalent	Cash Flow	Certainty Equivalent
0	-30,000	1.00	-40,000	1.00
1	15,000	0.95	25,000	0.90
2	15,000	0.85	20,000	0.80
3	10,000	0.70	15,000	0.70
4	10,000	0.65	10,000	0.60

Which project should be accepted, if the risk-free discount rate is 15%?

[Dec. 2009 (10 Marks)]

Ans.

Project-1:

Year	CFAT	CE	Adjusted CFAT	PV Factor 15%	PV
1	15,000	0.95	14,250	0.870	12,398
2	15,000	0.85	12,750	0.756	9,639
3	10,000	0.70	7,000	0.658	4,606
4	10,000	0.65	6,500	0.572	3,718
Total Present Value					30,361
(-) Initial Investment					(30,000)
Net present value					361

Project-2:

Year	CFAT	CE	Adjusted CFAT	PV Factor 15%	PV
1	25,000	0.90	22,500	0.870	19,575
2	20,000	0.80	16,000	0.756	12,096
3	15,000	0.70	10,500	0.658	6,909
4	10,000	0.60	6,000	0.572	3,432
Total Present Value					42,012
(-) Initial Investment					(40,000)
Net present value					2,012

Analysis: The Company should select Project-2 as it has higher NPV than Project-1.

Problem No. 23] Surya Manufacturers is planning to start a new manufacturing process.

Following are the estimated net cash flows and probabilities of the new manufacturing process:

Year	Net Cash Flows (₹)		
	P = 0.2	P = 0.6	P = 0.2
0	-2,00,000	-2,00,000	-2,00,000
1	40,000	60,000	80,000
2	40,000	60,000	80,000
3	40,000	60,000	80,000
4	40,000	60,000	80,000
5	40,000	60,000	80,000
(Salvage) 5	0	40,000	60,000

Surya Manufacturers cost of capital for an average risk project is 10%.

- (a) The project has average risk. Find the project's NPV.
- (b) Find the best case and worst case NPVs. What is the probability of occurrence of the worst case if the cash flows are perfectly dependent (perfectly positively correlated) over time and if they are independent over time?
- (c) Assume that all the cash flows are perfectly positively correlated, that is, there are only three possible cash flow streams over time: (i) the worst case; (ii) the most likely or base case; and (iii) the best case with probabilities 0.2, 0.6 and 0.2 respectively. These cases are represented by each of the columns in the given table. Find the expected NPV, the standard deviation and co-efficient of variation.

[June 2010 (20 Marks)]

Ans.

Calculation of expected cash inflow:

Year	P = 0.2			P = 0.6			P = 0.2			Total
	Cash Flow	Prob.	Expected CF	Cash Flow	Prob.	Expected CF	Cash Flow	Prob.	Expected CF	
1	40,000	0.2	8,000	60,000	0.6	36,000	80,000	0.2	16,000	60,000
2	40,000	0.2	8,000	60,000	0.6	36,000	80,000	0.2	16,000	60,000
3	40,000	0.2	8,000	60,000	0.6	36,000	80,000	0.2	16,000	60,000
4	40,000	0.2	8,000	60,000	0.6	36,000	80,000	0.2	16,000	60,000
5	40,000	0.2	8,000	60,000	0.6	36,000	80,000	0.2	16,000	60,000
5	0	0.2	0	40,000	0.6	24,000	60,000	0.2	12,000	36,000

Calculation of expected cash outflow:

$$(2,00,000 \times 0.2) + (2,00,000 \times 0.6) + (2,00,000 \times 0.2) = 2,00,000$$

Calculation of worst case NPV:

Year	CFAT	PV Factor 10%	PV
1 to 5	60,000	3.791	2,27,460
5	36,000	0.621	22,356
Total present value			2,49,816
(-) Initial Investment			(2,00,000)
Net present value			49,816

Calculation of most likely or base case NPV:

Year	CFAT	PV Factor 10%	PV
1 to 5	40,000	3.791	1,51,640
5	0	0.621	0
Total present value			1,51,640
(-) Initial Investment			(2,00,000)
Net present value			(48,360)

Calculation of best case NPV:

Year	CFAT	PV Factor 10%	PV
1 to 5	80,000	3.791	3,03,280
5	60,000	0.621	37,260
Total present value			3,40,540
(-) Initial Investment			(2,00,000)
Net present value			1,40,540

If cash flows are dependant, the probability of the worst case occurring is the probability of getting ₹40,000 net cash flow in year 1 is 0.2 i.e. 20%.

Calculation of average case NPV:

Year	CFAT	PV Factor 10%	PV
1 to 5	60,000	3.791	2,27,460
5	40,000	0.621	24,840
Total present value			2,52,300
(-) Initial Investment			(2,00,000)
Net present value			52,300

Calculation of expected NPV:

Case	NPV	Probability	Expected NPV
Worst	(48,360)	0.2	(9,672)
Average	52,300	0.6	31,380
Best	1,40,540	0.2	28,108
			<u>NPV = 49,816</u>

Calculation of standard deviation:

NPV	D	D ²	P	PD ²
(48,360)	(98,176)	9,63,85,26,976	0.2	1,92,77,05,395
52,300	2,484	61,70,256	0.6	37,02,154
1,40,540	90,724	8,23,08,44,176	0.2	1,64,61,68,835

$$\sigma^2 = 3,57,75,76,384$$

$$\sigma = 59,813$$

$$\text{Coefficient of variation} = \frac{\sigma}{\text{NPV}} = \frac{59,813}{49,816} = 1.2$$

Problem No. 24] The initial investment outlay for a capital investment project of Priyanka Ltd. consists of ₹ 100 lakh for plant & machinery and ₹ 40 lakh for working capital. Other details are summarized as follows:

Sales	: 1 lakh units of output for years 1 to 5
Selling price	: ₹ 120 per unit
Variable cost	: ₹ 60 per unit
Fixed overheads (excluding depreciation)	: ₹ 15 lakh per year for years 1 to 5
Depreciation on plant & machinery	: 25% on WDV method
Salvage value of plant & machinery	: Equal to the WDV at the end of year 5
Applicable tax rate	: 40%
Time horizon	: 5 years
Post-tax cut-off rate	: 12%

You are required to:

- (i) Calculate the NPV and indicate the financial viability of the project.
- (ii) Determine the sensitivity of the project's NPV under each of the conditions -
 - (a) Decrease in selling price by 5% and
 - (b) Increase in variable cost by 10%.

[Dec. 2012 (16 Marks)]

Ans.

Calculation of initial investment:

Cost of plant & machinery	1,00,00,000
(+) Working capital	40,00,000
Net initial investment	1,40,00,000

Calculation of depreciation:

Cost of plant & machinery	1,00,00,000
(-) Depreciation for 1st year	(25,00,000)
	75,00,000
(-) Depreciation for 2nd year	(18,75,000)
	56,25,000
(-) Depreciation for 3rd year	(14,06,250)
	42,18,750
(-) Depreciation for 4th year	(10,54,688)
	31,64,062
(-) Depreciation for 5th year	(7,91,016)
	23,73,046
Profit/loss	-
Salvage value at the end of 5th year	23,73,046

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Calculation of profit before depreciation & tax:

Selling price per unit	120
(-) Variable cost per unit	(60)
Contribution per unit	60
Total contribution (1,00,000 × 60)	60,00,000
(-) Fixed cost other than depreciation	(15,00,000)
Profit before depreciation & tax	45,00,000

Calculation of CFAT:

Particulars	Year 1	Year 2	Year 3	Year 4	Year 5
Profit before depreciation	45,00,000	45,00,000	45,00,000	45,00,000	45,00,000
(-) Depreciation	(25,00,000)	(18,75,000)	(14,06,250)	(10,54,688)	(7,91,016)
EBT	20,00,000	26,25,000	30,93,750	34,45,312	37,08,984
(-) Tax @ 40%	(8,00,000)	(10,50,000)	(12,37,500)	(13,78,125)	(14,83,594)
PAT	12,00,000	15,75,000	18,56,250	20,67,187	22,25,390
(+) Depreciation	25,00,000	18,75,000	14,06,250	10,54,688	7,91,016
CFAT	37,00,000	34,50,000	32,62,500	31,21,875	30,16,406
Working capital released	-	-	-	-	40,00,000
Salvage value	-	-	-	-	23,73,046
Net CFAT	37,00,000	34,50,000	32,62,500	31,21,875	93,89,452

Calculation of NPV:

Year	CFAT	PV Factor 12%	PV
1	37,00,000	0.893	33,04,100
2	34,50,000	0.797	27,49,650
3	32,62,500	0.712	23,22,900
4	31,21,875	0.636	19,85,513
5	93,89,452	0.567	53,23,819
Total present value			1,56,85,982
(-) Initial Investment			(1,40,00,000)
Net present value			16,85,982

Analysis: As NPV is positive, project is financially viable.

Sensitivity of the project's NPV with respect to decrease in selling price by 5%:

Selling price per unit after decrease of 5%	114
(-) Variable cost per unit	(60)
Contribution per unit	54
Total contribution (1,00,000 × 54)	54,00,000

Decrease in contribution/revenue = 60,00,000 - 54,00,000 = 6,00,000

Tax effect = 6,00,000 (1 - 0.4) = 3,60,000

Thus, revenue for 1 to 5 year will decrease by ₹ 3,60,000 per year.

Decline in NPV = 3,60,000 × 3.605
= 12,97,800

Percentage decline in NPV to base NPV = $\frac{12,97,800}{16,85,982} \times 100 = 76.98\%$

Sensitivity of the project's NPV with respect to increase in variable cost by 10%:

Selling price per unit	120
(-) Variable cost per unit after 10% increase	(66)
Contribution per unit	54
Total contribution (1,00,000 × 54)	54,00,000

Decrease in contribution/revenue = 60,00,000 - 54,00,000 = 6,00,000

Tax effect = 6,00,000 (1 - 0.4) = 3,60,000

Thus, revenue for 1 to 5 year will decrease by ₹ 3,60,000 per year.

Decline in NPV = 3,60,000 × 3.605
= 12,97,800

% decline in NPV to base NPV = $\frac{12,97,800}{16,85,982} \times 100 = 76.98\%$

Problem No. 25] Simon Ltd. is considering two mutually exclusive projects. Investment outlay of both the projects is ₹5 lakh and each is expected to have a life of 5 years. Under three possible situations their annual cash flows and probabilities are as under:

Situation	Probabilities	Project-A cash flow (₹)	Project-B cash flow (₹)
Good	0.3	6 lakh	5 lakh
Normal	0.4	4 lakh	4 lakh
Worse	0.3	2 lakh	3 lakh

If the cost of capital is 7%, which project should be accepted? Consider the risk parameter also in decision making. Explain with workings.

[June 2014 & June 2016 (10 Marks)]

Ans.

Calculation of expected cash flow for each Project:

(₹ in lakh)

Project-A

Cash flow	Probability	Expected Cash flow
6	0.3	1.8
4	0.4	1.6
2	0.3	0.6

NPV = 4.0

Project-B

Cash flow	Probability	Expected Cash flow
5	0.3	1.5
4	0.4	1.6
3	0.3	0.9

$$\overline{\text{NPV}} = 4.0$$

Calculation of standard deviation of Project-A:

NPV	D	D ²	P	PD ²
6	2	4	0.3	1.2
4	0	0	0.4	0
2	-2	4	0.3	1.2

$$\sigma^2 = 2.4$$

$$\sigma = 1.55$$

$$\text{Coefficient of variation} = \frac{\sigma}{\overline{\text{NPV}}} = \frac{1.55}{4} = 0.3875$$

Calculation of standard deviation of Project-B:

NPV	D	D ²	P	PD ²
5	1	1	0.3	0.3
4	0	0	0.4	0
3	-1	1	0.3	0.3

$$\sigma^2 = 0.6$$

$$\sigma = 0.78$$

$$\text{Coefficient of variation} = \frac{\sigma}{\overline{\text{NPV}}} = \frac{0.78}{4} = 0.195$$

Analysis: Project-A is more risk because of higher coefficient of variation.

Problem No. 26] Sagar Ltd. has been in IT business for 6 years and enjoys a favourable market reputation. Corporate tax is 30%. They anticipated that the demand for IT solutions would increase considerably since many foreign firms are setting-up their BPO centres in India. For an expansion project, they propose to invest ₹22 Crore to be funded by new debt and equity on 50:50 basis. Enquiries with merchant bankers reveal that funds can be available at following rates:

	Rate
Debt	
- First ₹5 Crore	10%
- Next ₹5 Crore	12%
All additional funds	15.72%
Equity	12%

Risk gradation by company 2% over cost of capital.
 You are required to compute the appropriate risk adjusted discount rate.
 [Dec. 2015 (4 Marks)]

Ans.

Cost of 10% debt: $K_d = I(1-t)$ $= 10(1-0.3)$ $= 7\%$	Cost of 12% debt: $K_d = I(1-t)$ $= 12(1-0.3)$ $= 8.4\%$	Cost of 15.72% debt: $K_d = I(1-t)$ $= 15.72(1-0.3)$ $= 11\%$
--	--	---

The company propose to invest ₹22 Crore to be funded by new debt and equity on 50:50 basis. Hence, 11 Crore will be funded by debt and remaining 11 Crore will be funded by equity.

Calculation of WACC:

Types of capital	₹ in Crore	%	Cost of Capital	Product
10% Debt	5	22.73%	7%	159.11
12% Debt	5	22.72%	8.4%	190.85
15.72% Debt	1	4.55%	11%	50.05
Equity	11	50%	12%	600.00
	22	100%		1,000.01

$$WACC = \frac{1,000.01}{100} = 10\%$$

$$\text{Risk adjusted discount rate} = 10\% + 2\% = 12\%$$

Problem No. 27] You are the CFO of Desire Ltd. Your company proposes to buy equipment costing ₹1,00,000. The equipment will last for 5 years. The cost of capital to the company is 10%. Your analyst has suggested the expected revenues, cost and corresponding probabilities as under:

Expected Revenue		Expected Cost	
Amount (₹)	Probability	Amount (₹)	Probability
1,00,000	0.15	62,500	0.10
1,25,000	0.40	75,000	0.25
1,37,500	0.30	87,500	0.35
1,50,000	0.15	1,00,000	0.30

You wish to run a simulation model and have picked the random numbers 81, 02, 60, 04, 46, 31, 67, 25 in that order, alternatively for revenues and costs. Decide whether the project can be undertaken by the company. [Dec. 2015 (8 Marks)]

TAXIANN

Ans.

Assignment of cumulative probabilities and random digit allocation:

Revenue	Probability	Cumulative probabilities	Random digit allocation
1,00,000	0.15	0.15	0 - 14*
1,25,000	0.40	0.55	15 - 54
1,37,500	0.30	0.85	55 - 84
1,50,000	0.15	1.00	85 - 99

Cost	Probability	Cumulative probabilities	Random digit allocation
62,500	0.10	0.10	0 - 09
75,000	0.25	0.35	10 - 34
87,500	0.35	0.70	35 - 69
1,00,000	0.30	1.00	70 - 99

* Note: Probability is 15%, random number digit should be 15% of the range between 0 and 99.

Hence UC CI = 0 to 14

Ascertainment of value by using random numbers:

Random numbers	Range	Revenue
81	55 - 84	1,37,500
60	55 - 84	1,37,500
46	15 - 54	1,25,000
67	55 - 84	1,37,500

$$\text{Average Revenue} = \frac{5,37,500}{4} = 1,34,375$$

Random numbers	Range	Cost
02	0 - 09	62,500
04	0 - 09	62,500
31	10 - 34	75,000
25	10 - 34	75,000

$$\text{Average Cost} = \frac{2,75,000}{4} = 68,750$$

$$\text{Average cash inflow} = 1,34,375 - 68,750 = 65,625$$

Calculation of NPV:

Year	Cash inflow	PV Factor 10%	PV
1 to 5	65,625	3.791	2,48,784
(-) Initial Investment			(1,00,000)
Net present value			1,48,784

Analysis: As NPV is positive, the project is financially viable.

Problem No. 28] An initial outlay of ₹24 lakh is contemplated in a project, for which the following cash flow estimates have been prepared:

Year	Net CFAT (₹)	Probability
Year 1	8,00,000	0.30
	7,00,000	0.40
	5,00,000	0.30
Year 2	7,00,000	0.25
	9,00,000	0.35
	10,00,000	0.40
Year 3 to 5	5,20,000	0.45
	6,40,000	0.25
	8,20,000	0.30

Advise whether the project is worthwhile, if the Discount Rate is 17%? What should be the maximum project cost, if it were to be taken up? [Dec. 2018 (8 Marks)]

Ans.

Calculation of expected cash inflow:

Year	Net CFAT (₹)	Probability	Amount	Total
Year 1	8,00,000	0.30	2,40,000	6,70,000
	7,00,000	0.40	2,80,000	
	5,00,000	0.30	1,50,000	
Year 2	7,00,000	0.25	1,75,000	8,90,000
	9,00,000	0.35	3,15,000	
	10,00,000	0.40	4,00,000	
Year 3 to 5	5,20,000	0.45	2,34,000	6,40,000
	6,40,000	0.25	1,60,000	
	8,20,000	0.30	2,46,000	

Year	Net CFAT	PV Factor @ 17%	PV
1	6,70,000	0.855	5,72,850
2	8,90,000	0.731	6,50,590
3	6,40,000	0.624	3,99,360

Year	Net CFAT	PV Factor @ 17%	PV
4	6,40,000	0.534	3,41,760
5	6,40,000	0.456	2,91,840
			<u>22,56,400</u>
(-) Initial investment			<u>(24,00,000)</u>
Net Present Value (NPV)			<u>(1,43,600)</u>

Analysis: NPV is negative. Project cannot be accepted.

Maximum Project Cost: For acceptance, the project cost, should be curtailed and revised downwards to ₹22,56,400 (₹24,00,000 - ₹1,43,600)

Problem No. 29] Varun Ltd. is evaluating a project whose life will not fall below 2 years, involving production and sale of 2,60,000 units of canned pineapple tins at the selling price of ₹100 per unit. The following cash flows have been estimated:

Particulars	₹ '000		
	Year 0	Year 1	Year 2
Initial Investment	(28,000)	-	-
Variable costs	-	(8,000)	(8,000)
Cash inflow	-	26,000	26,000
Net cash flow	<u>(28,000)</u>	<u>18,000</u>	<u>18,000</u>

The cost of capital is 10%.

Required:

- (i) Can the project be accepted?
- (ii) Measure the sensitivity of the project to change in the following variables:
 - (a) Initial Outlay
 - (b) Sales Volume
 - (c) Selling Price
 - (d) Variable Costs
 - (e) Discount Rate
- (iii) Name the variable to which the project is most sensitive and least sensitive.

[June 2019 (8 Marks)]

Ans.

(i) Calculation of NPV:

Year	CFAT	PV Factor 10%	PV
1 to 2	18,000	1.7355	31,239
(-) Initial investment			<u>(28,000)</u>
NPV			<u>3,239</u>

Since, NPV is positive, project can be accepted.

(ii) *Measuring the sensitivity of the project with respect various variables:*

(a) **Sensitivity with respect to initial outlay:**

Since NPV is ₹ 23,239, the outlay can increase from ₹ 28,000 to ₹ 31,239 before NPV becomes zero. Therefore, there is margin of ₹ 3,239 or 9.26% of the initial outlay.

$$\text{Margin for initial outlay} = \frac{3,239}{28,000} \times 100 = 11.57\%$$

(b) **Sensitivity as to sales volume:**

Let unit sold to get NPV zero is 'x'.

Year	CFAT	PV Factor 10%	PV
1 to 2	100x - 8,000	1.7355	173.55x - 13,884
(-) Initial investment			(28,000)
NPV			0

$$173.55x - 13,884 - 28,000 = 0$$

$$173.55x = 41,884$$

$$x = 241.34$$

The required fall in sales volume to get NPV zero = 260 - 241.34 = 18.66

$$\text{Percentage wise change in sale volume} = \frac{18.66}{260} \times 100 = 7.18\%$$

(c) **Sensitivity as to sale price per unit:**

Let the cash flow per unit be 'x' to get the NPV zero.

Year	CFAT	PV Factor 10%	PV
1 to 2	260x - 8,000	1.7355	451.23x - 13,884
(-) Initial investment			(28,000)
NPV			0

$$451.23x - 13,884 - 28,000 = 0$$

$$451.23x = 41,884$$

$$x = 92.82$$

Change in sale price per unit needed to become NPV zero = 100 - 92.82 = 7.18

$$\text{Percentage wise change in sale price per unit} = \frac{7.18}{100} \times 100 = 7.18\%$$

(d) **Sensitivity as to variable cost per unit:**

Existing variable cost per unit = 8,000 ÷ 260 = 30.76

Let the variable cost per unit be 'x' to get the NPV zero.

Year	CFAT	PV Factor 10%	PV
1 to 2	26,000 - 260x	1.7355	45,123 - 451.23x
(-) Initial investment			(28,000)
NPV			0

$$45,123 - 451.23x - 28,000 = 0$$

$$451.23x = 17,123$$

$$451.23x = 37.95$$

$$\text{Increase in variable cost per unit needed to become NPV zero} = \frac{37.95 - 30.76}{30.76} = 7.29$$

$$\text{Percentage wise change in variable cost per unit} = \frac{7.29}{30.76} \times 100 = 23.37\%$$

(e) Sensitivity as to discount rate (calculation of IRR):

NPV at 10% PV Factor is 3,289.

Let's calculate NPV at 20%.

Year	CFAT	PV Factor 20%	PV
1 to 2	18,000	1.5278	27,500
(-) Initial investment			(28,000)
NPV			(500)

$$\text{IRR} = 10 + \frac{3,239}{3,239 + 500} \times 10$$

$$= 10 + \frac{3,239}{3,739} \times 10$$

$$= 10 + 8.66$$

$$= 18.66\%$$

$$\text{Increase in discount rate needed to become NPV zero} = 18.66\% - 10\% = 8.66\%$$

$$\text{Percentage wise change in discount rate} = \frac{8.66}{10} \times 100 = 86.6\%$$

(iii) The project is most sensitive to sales volume and sales price, and least sensitive to discount rate.

Problem No. 30] The MNO company is considering an investment in one of the two mutually exclusive proposals. Project A which involves an initial outlay of ₹ 1,50,000 and Project B which has an outlay of ₹ 1,30,000. The certainty equivalent approach is employed in evaluating risky investments. The current yield on treasury bills is 5% p.a. and the company uses this as riskless rate. The expected values of net cash flows with their respective certainty equivalents are:

Year	Project A		Project B	
	Net Cash flow (₹ in thousands)	Certainty equivalent	Net Cash flow (₹ in thousands)	Certainty equivalent
1	90	0.8	90	0.9
2	100	0.7	90	0.8
3	110	0.5	100	0.6

Which project should be acceptable to the company? [June 2021 (4 Marks)]

Ans.

Determination of NPV of Project A:

Year	CFAT	CE	Adjusted CFAT	PV Factor 5%	PV
1	90	0.8	72	0.952	68.544
2	100	0.7	70	0.907	63.490
3	110	0.5	55	0.864	47.520
Total present value					179.554
(-) Initial Investment					(150.000)
Net present value					29.544

Determination of NPV of Project B:

Year	CFAT	CE	Adjusted CFAT	PV Factor 5%	PV
1	90	0.9	81	0.952	77.112
2	90	0.8	72	0.907	65.304
3	100	0.6	60	0.864	51.840
Total present value					194.256
(-) Initial Investment					(130.000)
Net present value					64.256

Decision: Since NPV of Project B is higher it should be accepted.

COST OF CAPITAL

THEORETICAL QUESTIONS

Q. 1. Retained earnings have no cost. Do you agree? Give reasons your answer.
 [Dec. 2003 (5 Marks)], [Dec. 2004 (5 Marks)]

Or

"Cost of retained earnings is the opportunity cost of returns obtained in a similar investment elsewhere." Discuss.
 [Dec. 2006 (5 Marks)]

Or

As there is no explicit cost of retained earnings, these funds are free of cost. Comment.
 [June 2015 (5 Marks)], [June 2016 (5 Marks)]

Ans.
 Many people think that reserve & surplus do not have any type of cost which is not correct approach. The reason is that reserve & surplus indicates the amount of profit not distributed among equity shareholders. These retained earnings had been distributed among shareholder by way of dividend, some earnings would have resulted to them by reinvesting them.
 Therefore, the cost of retained earnings may be considered as equivalent to the earnings forgone by shareholder. In other words, the opportunity cost of reserve & surplus may be considered as their cost, which is equivalent to the income that would otherwise earn by placing these funds in alternative investment.
 Thus, the statement that retained earnings/reserve & surplus have no cost is not correct.

Q. 2. Write a short note on: Economic Value Added. [Dec. 2012 (5 Marks)]

Or

Economic Value Added (EVA) concept is conformity with objective of wealth maximization. Explain. [June 2014 (5 Marks)]

Or

Describe the tool that provides insights into whether a company is creating or destroying wealth. [Dec. 2015 (4 Marks)]

Or

Economic Value Added (EVA) represents the real profit of an entity.

[Dec. 2020 (5 Marks)]

Ans.

The New York based financial advisory **Stern Stewart & Co.** postulated a concept of economic value added. *Economic value added measures the excess returns over cost of capital.* EVA measures whether the operating profit is sufficient enough to cover cost of capital. If a company's EVA is negative it is destroying shareholders wealth even though it may be reporting positive and growing EPS or return on capital employed.

How to calculate EVA:

Particulars	₹
EBIT	xxxx
Less: Interest	(xxx)
EBT	xxxx
Less: Tax	(xxx)
Profit After Tax (PAT)	xxxx
Add: Interest (1 - t)	xxxx
Net Operating Profit After Tax (NOPAT)	xxxx
Less: Cost of Capital	(xxx)
Economic Value Added	xxxx

Expressed as a formula: $EVA = NOPAT - (\text{Capital Employed} \times WACC)$

Although EVA is a value based measure, and it gives in valuations exactly same answer as discounted cash flow, the periodic EVA values still have some accounting distortions. That is because EVA is after all an accounting-based concept and suffers from the same problems of accounting rate of returns (ROI etc.). In other words, the historical asset values that distort ROI distort EVA values also.

In EVA valuations, the historical asset values (book value) are irrelevant and only the cash flows are left to give the end result.

Q. 3. Write a short note on: Cost of Retained Earnings.

[Dec. 2011 (5 Marks)], [Dec. 2015 (5 Marks)]

Ans. Like another source of fund, retained earnings involve cost. It is the opportunity cost of dividends foregone by shareholders.

There are two approaches to measure this opportunity cost. One approach is by using Discounted Cash Flow (DCF) method and the second approach is by using capital asset pricing model.

(a) $K_r = \frac{D_1}{P_0} + g$	Where, K_r = Cost of retained earning D_1 = Dividend P_0 = Current market price g = Growth rate
(b) $K_r = K_e (1 - t_p)$	Where, K_r = Cost of retained earning K_e = Cost of equity t_p = Personal tax rate applicable to shareholder
(c) $K_r = R_f + \beta (R_m - R_f)$	Where, K_r = Cost of retained earning R_f = Rate of return on security β = Beta coefficient R_m = Rate of return on market portfolio

Q. 4. Cost of capital is used by a company as a minimum benchmark for its yield.
Comment. [June 2014 (5 Marks)]

Ans. Cost of capital refers to cost of raising funds, which includes both debt and equity. Thus, it is minimum return that investors seek from the company in return of funds invested by them. Hence, it sets a benchmark/threshold for the company to earn that minimum return to satisfy its inventors.

To conclude, cost of capital is the minimum benchmark for yield and company should try to maximize its yield over and above the cost of capital to increase market value and enable wealth maximization which is the ultimate object of the business.

Q. 5. Capital Asset Pricing Model (CAPM) is a tool to work out cost of equity.
[June 2015 (5 Marks)]

Ans.

Capital Assets Pricing Method: This model describes the relationship between non-diversifiable and return for securities.

Cost of equity capital under CAPM model calculated by following formula:

$$K_e = R_f + \beta (R_m - R_f)$$

Where,

K_e = Cost of equity capital

R_f = Rate of return on security

β = Beta coefficient

R_m = Rate of return on market portfolio

$R_m - R_f$ = Risk Premium

Q. 6. In real life, the component costs of debt and equity are jointly operational rather than independently determined. Elucidate. [Dec. 2014 (5 Marks)]

Ans. In most of the companies the capital structure consists of debt and equity. Cost of availing debt funds is known as 'cost of debt' and cost of availing equity funds is known as 'cost of equity'. High component of debt funds increase the earning for its shareholders but at the same time increase the business/operating risk for the company.

Thus, companies try to keep optimum combination of debt funds and equity funds in their capital structure. As both type of funds normally exist in capital structure cost of debt and cost of equity are jointly operational.

Q. 7. Distinguish between: Explicit Cost & Implicit Cost. [June 2015 (4 Marks)]

Ans.

Explicit & Implicit Cost: The cost of capital may be explicit or implicit cost on the basis of the computation of cost of capital.

Explicit cost is the rate that the firm pays to procure financing.

Implicit cost is the rate of return associated with the best investment opportunity for the firm and its shareholders that will be forgone if the projects presently under consideration by the firm were accepted.

Q. 8. Base Ltd. is not satisfied with its economic value added and wants to improve it further. What corrective action should it take to improve the same?

[Dec. 2015 (3 Marks)]

Or

What corrective action to be taken by the companies to improve Economic Value Added?

[Dec. 2018 (3 Marks)]

Or

What do you understand by Economic Value Added? Explain the corrective action to improve Economic Value Added.

[Dec. 2021 (3 Marks)]

Ans.

Corrective action to improve EVA

1. Operating performance with respect to Operating Profit Margins or Asset Turnover Ratios could be improved to generate more revenue without using more capital.
2. The capital invested in the business might be reduced by selling under-utilized assets; this strategy will simultaneously improve operating performance through a higher asset turnover ratio, as well as a reduced capital charge against those earnings because of a reduced debt or equity capital investment.
3. Redeploy the capital invested to projects and activities that have higher operating performance than the current projects or investments are exhibiting.
4. If the business is not highly leveraged, change the capital structure by substituting lower cost debt for higher cost equity. Although this last strategy will decrease net income because of the higher interest cost, it will improve the EVA of the business because the total cost of debt and equity is reduced, and EVA measures the value created after all costs of capital (debt and equity) have been taken into account.

Q. 9. State the drawbacks of adopting Shareholder Value Added (SVA) approach. [Dec. 2015 (5 Marks)]

Ans.

Drawbacks of adopting Shareholder Value Added (SVA):

- A limitation in the use of SVA as a performance measure is that, by nature, it is an aggregate measure. In order to analyze the underlying causes of any changes in calculated value between years, it is necessary to fully comprehend the value drivers and activities specific to a given firm.
- There may be certain enterprises which are subject to any degree of price regulation then it may not be possible for management to adjust output prices to achieve a commercial return in response to upward movements in input prices. Such a situation may result in SVA being reduced even though there may have been no decrease in overall efficiency.
- Similarly, a reduction in direct Government funding would result in a decrease in SVA.
- Combined with the use of traditional accounting measures, a thorough knowledge of the value drivers of the business will assist in determining the underlying causes of fluctuations in the value added measure.
- Again, the use of SVA is not a substitute for detailed analysis of business drivers, rather it is an additional measurement tool with an economic foundation.

Q. 10. "The EVA is a tool to underline the shareholders value." Comment. [June 2017 (5 Marks)]

Ans. Economic Value Added (EVA) is the after tax operating profits generated by a business minus the cost of the capital deployed to generate that cash flow. Representing real profit versus accounting profit, EVA underlines shareholder value, which is the main target of leading companies' strategies.

There are two key components to EVA. The Net Operating Profit After Tax (NOPAT) and the capital charge, which is the amount of capital times the cost of capital. In other words, it is the total pool of profits available to provide cash return to those who provided capital to the firm. The capital charge is the product of the cost of capital times the capital tied up in the investment. In other words, the capital charge is the cash flow required to compensate investors for the riskiness of the business given the amount of capital invested. On the one hand, the cost of capital is the minimum rate of return on capital required to compensate debt and equity investors for bearing risk—a cut-off rate to create value and capital is the amount of cash invested in the business, net of depreciation.

$$EVA = NOPAT - [Capital \times \text{Cost of Capital}]$$

Q. 11. Discuss the controllable factors those support to optimize the cost of capital of a firm. [June 2017 (4 Marks)]

Or

Cost of capital is affected by controllable as well as uncontrollable factors. Explain. [Dec. 2018 (4 Marks)]

Ans.

Cost of capital is the required rate of return that a firm must achieve to cover the cost of generating funds in the market place. It is the rate of return that a firm must earn on its project investments to maintain its market value and attract funds.

Cost of capital is affected by both controllable and uncontrollable factors. The same are discussed below:

Controllable factors affecting cost of capital: These are the factors that affect the cost of capital and the company has control over them. These factors are as follows:

- (1) **Capital Structure Policy:** A firm has control over its capital structure, and it targets an optimal capital structure. As more debt is issued, the cost of debt increases, and as more equity is issued, the cost of equity increases.
- (2) **Dividend Policy:** Given that the firm has control over its payout ratio, the breakpoint of the marginal cost of capital schedule can be changed. The internally generated equity has a lower cost as compared to newly issued equity. As the payout ratio of the company increases, the breakpoint between lower-cost internally generated equity and newly issued equity is lowered.
- (3) **Investment Policy:** It is assumed that, when making investment decisions, the company is making investments with similar degrees of risk. If a company changes its investment policy relative to its risk, both the cost of debt and cost of equity changes.

Uncontrollable factors affecting the cost of capital: These are the factors affecting the cost of capital on which the company has no control:

- (1) **Level of Interest Rates:** The level of interest rates in the economy affects the cost of debt and, potentially, the cost of equity. For example, when interest rates increase the cost of debt increases, which in turn increases the cost of capital.
- (2) **Tax Rates:** Tax rates affect thereby after-tax cost of debt. As tax rates increase, the cost of debt decreases, thereby decreasing the cost of capital.

Q. 12. Write a short note on: Shareholders Value Added.

Or

What do you understand by Shareholder Value Added (SVA)? What are the benefits of adopting SVA?
[June 2019 (5 Marks)]

Ans.

Shareholder Value Added (SVA) represents the economic profits generated by a business above and beyond the minimum return required by all providers of capital. "Value" is added when the overall net economic cash flow of the business exceeds the economic cost of all the capital employed to produce the operating profit. Therefore, SVA integrates financial statements of the business (profit and loss, balance sheet and cash flow) into one meaningful measure.

The SVA approach is a methodology which recognizes that equity holders as well as debt financiers need to be compensated for the bearing of investment risk. The SVA methodology is a highly flexible approach to assist management in the decision making process. Its applications include performance monitoring, capital budgeting, output pricing and market valuation of the entity.

PROBLEMS & SOLUTIONS

Problem No. 1] Indigo Ltd. has the following capital structure:

	₹ in Lakh
Ordinary shares of ₹1 each	1,000
Retained earnings	160
8% Debentures	440
	1,600

In order to undertake a programme of expansion, the company requires to raise additional capital of ₹400 lakh and three alternative financing schemes are under consideration:

- (i) A rights issue, at nominal value, of an additional 400 lakh ₹1 ordinary shares or
- (ii) Issue, at nominal value, 400 lakh, 10% preference shares of ₹1 or
- (iii) Issue an additional ₹400 lakh of 8% debentures.

Without the expansion programme, Indigo Ltd's estimated annual profit before interest and tax in the foreseeable future is ₹200 lakh. If the programme proceeds, this will rise to ₹280 lakh.

At present, the market values of the company's securities are:

Ordinary shares	₹5.40 (ex-dividend) per share
Debentures	₹110 per ₹100 nominal

The last ordinary dividend was 20 paise per share. If expansion does not take place, ordinary dividends are expected to grow at a constant rate of 2.5% per annum. After some initial fluctuations, the anticipated effect of expansion on dividends and market values is expected to stabilize as follows:

	Expansion Financed by		
	Rights Issue	Preference Shares	Debentures
Market value of an ordinary share	₹5.60	₹5.80	₹6.00
Market value of debentures per ₹100	₹110	₹110	₹108
Market value of a preference share	NA	₹1.14	NA
Annual growth rate in ordinary shares	3.5%	4.0%	5.0%

The company's profit is subject to corporation tax at 35% and this rate is unlikely to change.

You are required to calculate for each alternative financing scheme:

- (i) Gearing ratio
- (ii) Profit available per ordinary share
- (iii) Weighted average cost of capital based on market value.

Calculations may be restricted to two decimal places.

[June 2011 & Dec. 2014 (14 Marks)]

TAMMANN

Ans.

(i)

Gearing ratio for existing capital structure:

$$\text{Gearing Ratio} = \frac{\text{Fixed income bearing funds}}{\text{Equity shareholders funds}} = \frac{440}{1,160} = 0.379$$

If expansion programme is funded by issuing ordinary shares:

$$\frac{440}{1,560} = 0.282$$

If expansion programme is funded by issuing preference shares or debentures:

$$\frac{840}{1,160} = 0.724$$

(ii)

Statement showing profit available per ordinary share:

(₹ in lakh)

Particulars	Existing	Rights Issue	Preference Shares	Debentures
EBIT	200.00	280.00	280.00	280.00
(-) Interest				
- Existing	(35.20)	(35.20)	(35.20)	(35.20)
- New	-	-	-	(32.00)
EBT	164.80	244.80	244.80	212.80
(-) Tax @ 35%	(57.68)	(85.68)	(85.68)	(74.48)
PAT	107.12	159.12	159.12	138.32
(-) Preference dividend	-	-	(40.00)	-
Profit available for equity shareholders	107.12	159.12	119.12	138.32
No. of equity shares (in lakh)	1,000	1,400	1,000	1,000
EPS	0.107	0.114	0.119	0.138

(iii) Computation of WACC of existing capital structure:

Dividend Growth Method:

$$K_e = \frac{D_1}{P_0} + g$$

$$= \frac{0.205}{5.40} + 0.025$$

$$D_1 = D_0 (1 + g)$$

$$= 0.20 (1 + 0.025)$$

$$= 0.205$$

$$K_e = 0.06296 \text{ i.e. } 6.296\%$$

Cost of existing 8% debentures (on market price):

$$K_d = \frac{I(1-t)}{P_0}$$

$$= \frac{8(1-0.35)}{110}$$

$$= 0.04727 \text{ i.e. } 4.727\%$$

Calculation of WACC of existing capital structure (market value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity Shares	5,400	91.77%	6.296%	577.78
8% Debentures (Existing)	484	8.23%	4.727%	38.90
	5,884	100%		616.68

$$WACC = \frac{616.68}{100} = 6.17\%$$

(a) Computation of WACC if expansion is financed by issue of right shares:

Dividend Growth Method:

$$K_e = \frac{D_1}{P_0} + g$$

$$= \frac{0.207}{5.60} + 0.035$$

$$D_1 = D_0 (1 + g)$$

$$= 0.20 (1 + 0.035)$$

$$= 0.207$$

$$K_e = 0.07196 \text{ i.e. } 7.196\%$$

Cost of existing 8% debentures (on market price):

$$K_d = 0.04727 \text{ i.e. } 4.727\%$$

Calculation of WACC (market value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity Shares	7,840	94.19%	7.196%	677.79
8% Debentures	484	5.81%	4.727%	27.46
	8,324	100%		705.25

$$WACC = \frac{705.25}{100} = 7.05\%$$

(b) Computation of WACC if expansion is financed by issue of preference shares:

Dividend Growth Method:

$$K_e = \frac{D_1}{P_0} + g$$

$$= \frac{0.208}{5.80} + 0.04$$

$$D_1 = D_0 (1 + g)$$

$$= 0.20 (1 + 0.04)$$

$$= 0.208$$

$$K_e = 0.07586 \text{ i.e. } 7.586\%$$

Cost of existing 8% debentures (on market price):

$$K_d = 0.04727 \text{ i.e. } 4.727\%$$

Cost of 10% preference shares (on market price):

$$K_p = \frac{D_p}{P_p}$$

$$= \frac{0.1}{1.14}$$

$$= 0.08772 \text{ i.e. } 8.772\%$$

Calculation of WACC (market value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity Shares	5,800	86.05%	7.586%	652.78
8% Debentures	484	7.18%	4.727%	33.94
10% preference shares	456	6.77%	8.772%	59.39
	6,740	100%		746.11

$$WACC = \frac{746.11}{100} = 7.46\%$$

(c) Computation of WACC if expansion is financed by issue of new 8% debentures:

Dividend Growth Method:

$$K_e = \frac{D_1}{P_0} + g$$

$$D_1 = D_0 (1 + g)$$

$$= 0.20 (1 + 0.05)$$

$$= 0.21$$

$$= \frac{0.21}{6} + 0.05$$

$$K_e = 0.085 \text{ i.e. } 8.5\%$$

Cost of 8% debenture (based on market value):

$$K_d = \frac{I(1-t)}{P_0}$$

$$= \frac{8(1-0.35)}{108}$$

$$= 0.04815 \text{ i.e. } 4.815\%$$

Calculation of WACC (market value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity shares	6,000	86.87%	8.5%	738.40
8% Debentures	907.2	13.13%	4.815%	63.22
	6,907.2	100%		801.62

$$WACC = \frac{801.62}{100} = 8.02\%$$

Problem No. 2] Krishna Ltd. is currently financed with ₹10,00,000, 7% bonds and ₹20,00,000 of common stock. The stock has a beta of 1.5, risk-free rate of return 4% and market risk premium 3.5%. The marginal tax rate for a company of this size is 35%.

Compute the WACC of Krishna Ltd.?

[Dec. 2014 (4 Marks)]

Ans.

Cost of equity – CAPM Method:

$$K_e = R_f + \beta (R_m - R_f) \quad \text{Risk premium} = (R_m - R_f)$$

$$= 4 + 1.5 (3.5)$$

$$= 9.25\%$$

Cost of debt:

$$K_d = 7(1 - t)$$

$$= 7(1 - 0.35)$$

$$= 4.55\%$$

Calculation of WACC (book value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity	20,00,000	66.67%	9.25%	616.70
7% Bonds	10,00,000	33.33%	4.55%	151.65
	30,00,000	100%		768.35

$$WACC = \frac{768.35}{100} = 7.68\%$$

Problem No. 3] Using capital employed, compute the EVA with the help of following information:

	2021-2022	2022-2023	2023-2024
	₹	₹	₹
Equity	10,00,000	15,00,000	17,00,000
Debt (10%)	5,00,000	7,00,000	7,00,000
Profit after tax	2,00,000	4,00,000	8,00,000

Risk-free rate of return is 7%. Beta (β) = 0.9, Market rate of return = 15%.

Applicable tax rate is 40%.

[Dec. 2014 (8 Marks)]

Ans.

Particulars	2021-2022	2022-2023	2023-2024
Profit After Tax (PAT)	2,00,000	4,00,000	8,00,000
Add: Interest (1 - t)	30,000	42,000	42,000
Net Operating Profit After Tax (NOPAT)	2,30,000	4,42,000	8,42,000
Less: Cost of Capital	(1,72,050)	(2,54,980)	(2,83,440)
Economic Value Added	57,950	1,87,020	5,58,560

Calculation of cost of equity:

$$K_e = R_f + \beta(R_m - R_f)$$

$$= 7 + 0.9(15 - 7)$$

$$= 14.2\%$$

R_f = Risk free rate of interest
 R_m = Market rate of return
 β = Beta factor

Calculation of cost of debts:

$$K_d = I(1 - t)$$

$$= 10(1 - 0.4)$$

$$= 6\%$$

I = Interest
 t = Tax Rate

Capital	₹	%	Cost of Capital	Product
Equity	10,00,000	66.67%	14.2%	946.67
10% Debt	5,00,000	33.33%	6%	200
	15,00,000	100.00%		1,146.67

$$\text{WACC (2021-2022)} = \frac{1,146.67}{100} = 11.47\%$$

Capital	₹	%	Cost of Capital	Product
Equity	15,00,000	68.18%	14.2%	968.16
10% Debt	7,00,000	31.82%	6%	190.92
	22,00,000	100.00%		1159.08

$$\text{WACC (2022-2023)} = \frac{1159.08}{100} = 11.59\%$$

Capital	₹	%	Cost of Capital	Product
Equity	17,00,000	70.83%	14.2%	1,005.79
10% Debt	7,00,000	29.17%	6%	175.02
	24,00,000	100.00%		1,180.81

$$\text{WACC (2023-2024)} = \frac{1,180.81}{100} = 11.81\%$$

Problem No. 4] Apoorva Ltd. has assets of ₹32,00,000 that have been financed as follows:

	₹
Equity shares of ₹100 each	18,00,000
General reserve	3,60,000
Debt	10,40,000

For the year ended 31st March, 2014, the company's total profits before interest and taxes were ₹6,23,000. The company pays 8% interest on borrowed capital and the tax bracket is 40%. The market value of the equity as on 31st March, 2014 was ₹150 per share.

From the above, determine the weighted average cost of capital using market values as weights. [June 2015 (8 Marks)]

Ans.

Particulars	₹
EBIT	6,23,000
(-) Interest	(83,200)
EBT	5,39,800
(-) Tax @ 40%	(2,15,920)
Profit available for equity shareholders	3,23,880

$$\text{EPS} = \frac{3,23,880}{18,000} = 18 \text{ per share}$$

Cost of equity - Price Earning Method:

$$K_e = \frac{\text{EPS}}{P_0}$$

$$= \frac{18}{150}$$

$$= 0.12 \text{ i.e. } 12\%$$

Cost of debt:

$$K_d = 1(1 - t)$$

$$= 8(1 - 0.4)$$

$$= 4.8\%$$

Calculation of WACC (market value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity	27,00,000	72.19%	12%	866.28
8% Debt	10,40,000	27.81%	4.8%	133.49
	37,40,000	100%		999.77

$$\text{WACC} = \frac{999.77}{100} = 9.998\% \text{ i.e. } 10\%$$

Problem No. 5] Prosperous Bank has a criterion that it will give loans to companies that have an Economic Value Added (EVA) greater than zero for the past three years on an average.

The bank is considering lending money to a small company that has the economic value characteristics shown below:

- (i) Average operating income after tax equals to ₹ 25,00,000 per year for the last 3 years.
- (ii) Average total assets over the last 3 years equals ₹ 75,00,000.
- (iii) Weighted average cost of capital appropriate for the company is 10%, applicable for all 3 years.
- (iv) The company's average current liabilities over the past 3 years are ₹ 15,00,000.

Does the company meet the bank's criterion for a positive EVA? Show your workings.

[June 2015 (5 Marks)]

Ans.

Particulars	₹
Net Operating Profit After Tax (NOPAT)	25,00,000
Less: Cost of Capital (60,00,000 × 10%)	(6,00,000)
Economic Value Added	19,00,000

Total Assets – Current Liabilities = Capital Employed

$$75,00,000 - 15,00,000 = 60,00,000$$

Analysis: Since, Company has positive EVA, Prosperous Bank can grant the loan.

Problem No. 6] ABC Ltd. has 10,000 shares of ₹ 7 each, ₹ 10,000, 12% debentures and ₹ 20,000 as short term loan @ 10%. Tax rate for the company is 30%.

Assume the cost of equity capital as 20%.

Calculate weighted average cost of capital at book value. [Dec. 2015 (4 Marks)]

Ans.

Cost of 12% debentures:

$$\begin{aligned} K_d &= I(1-t) \\ &= 12(1-0.3) \\ &= 8.4\% \end{aligned}$$

Cost of short term loan:

$$\begin{aligned} K_d &= I(1-t) \\ &= 10(1-0.3) \\ &= 7\% \end{aligned}$$

Calculation of WACC (book value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity	70,000	70%	20%	1,400
12% Debentures	10,000	10%	8.4%	84
10% Short term loan	20,000	20%	7%	140
	1,00,000	100%		1,624

$$WACC = \frac{1,624}{100} = 16.24\%$$

Problem No. 7] From the following data determine the cost of capital using market value as weights:

	(₹)	Market Value (₹)
Debentures @ ₹1,000 each	15,00,000	1,100 each
Preference shares @ ₹10 each	5,00,000	12 each
Equity shares @ ₹100 each	20,00,000	200 each
TOTAL	40,00,000	

Debentures carry 8% rate of interest, issued and redeemable at par with maturity period of 20 years and floating cost 4%.

Preference shares carry 10% dividend rate, issued and redeemable at par with maturity period of 15 years and floating cost 5%.

Equity dividend expected at the end of year is ₹20 per share whereas anticipated dividend growth rate is 5%. Corporate tax is 30%.

[Dec. 2015 (8 Marks)]

Ans.

Cost of debt:

$$K_d = \frac{\left[I(1-t) + \left(\frac{R_v - S_v}{N} \right) \right]}{\left(\frac{R_v + S_v}{2} \right)}$$

$$S_v = 1,000 - 40 = 960$$

$$= \frac{\left[80(1-0.3) + \left(\frac{1,000-960}{20} \right) \right]}{\left(\frac{1,000+960}{2} \right)}$$

$$= \frac{56 + 2}{980}$$

$$K_d = 0.05918 \text{ i.e. } 5.92\%$$

Cost of redeemable preference shares:

$$K_r = \frac{\left[D_p + \left(\frac{R_v - S_v}{N} \right) \right]}{\left(\frac{R_v + S_v}{2} \right)}$$

$$= \frac{\left[1 + \left(\frac{10 - 9.5}{15} \right) \right]}{\left(\frac{10 + 9.5}{2} \right)}$$

$$= \frac{1.0333}{9.75}$$

$$K_p = 0.10598 \text{ i.e. } 10.598\%$$

Cost of equity - Dividend Growth Method:

$$K_e = \frac{D_1}{P_0} + g$$

$$= \frac{20}{200} + 0.05$$

$$K_e = 0.15 \text{ i.e. } 15\%$$

Calculation of WACC (market value basis):

Types of capital	₹	%	Cost of Capital	Product
8% Debentures	16,50,000	26.4%	5.92%	156.29
10% Preference shares	6,00,000	9.6%	10.598%	101.74
Equity shares	40,00,000	64%	15%	960.00
	62,50,000	100%		1,218.03

$$\text{WACC} = \frac{1,218.03}{100} = 12.18\%$$

Problem No. 8] Zoya Ltd. has obtained capital from the following sources and the specific costs are given against them:

Type of capital	Book value (₹ in lakh)	Market value (₹ in lakh)	Cost of capital (%)
Debentures	4	3.8	5
Preference shares	1	1.1	8
Equity shares	6	9.0	13
Retained earnings	2	3.0	9
	<u>13</u>	<u>16.9</u>	

You are required to calculate weighted average cost of capital using:

(i) Book value weight and

(ii) Market value weight

[June 2016 (4 Marks)]

Ans.

Calculation of WACC (book value basis):

Types of capital	₹ in lakh	%	Cost of Capital	Product
Debentures	4	30.77%	5%	153.85
Preference shares	1	7.69%	8%	61.52
Equity shares	6	46.15%	13%	599.95
Retained earnings	2	15.38%	9%	138.42
	<u>13</u>	<u>100%</u>		<u>953.74</u>

$$\text{WACC} = \frac{953.74}{100} = 9.54\%$$

Calculation of WACC (market value basis):

Types of capital	₹ in lakh	%	Cost of Capital	Product
Debentures	3.8	22.49%	5%	112.45
Preference shares	1.1	6.51%	8%	52.08
Equity shares	9.0	53.25%	13%	692.25
Retained earnings	3.0	17.75%	9%	159.75
	<u>16.9</u>	<u>100%</u>		<u>1,016.53</u>

$$\text{WACC} = \frac{1,016.53}{100} = 10.17\%$$

Problem No. 9] Determine weighted average cost of capital using market value weights:

<i>Book value structure</i>	₹
Debentures (₹ 100 per debenture)	8,00,000
Preference shares (₹ 100 per share)	2,00,000
Equity shares (₹ 10 per share)	<u>10,00,000</u>
	<u>20,00,000</u>

Market prices of these securities are:

Debentures	: ₹ 110 per debenture
Preference shares	: ₹ 120 per share
Equity shares	: ₹ 22 per share

Based on external investment opportunities, the expected return on such debentures, preference shares and equity shares have been determined at 6.84%, 14.62% and 16.10% respectively. [June 2016 (6 Marks)]

Ans.

Calculation of WACC (market value basis):

Types of capital	₹	%	Cost of Capital	Product
Debentures	8,80,000	26.51%	6.84%	181.33
Preference shares	2,40,000	7.23%	14.62%	105.70
Equity shares	22,00,000	66.27%	16.10%	1,066.95
	33,20,000	100%		1,353.98

$$\text{WACC} = \frac{1,353.98}{100} = 13.54\%$$

Problem No. 10] Balance sheet of Zupiter Ltd. as on 31st March, 2013 is as under:

Particulars	₹
I. EQUITY AND LIABILITIES	
(1) Shareholders funds	
Equity share capital	10,00,000
(2) Non-current liabilities	
Long-term debts	15,00,000
(3) Current liabilities	
(a) Trade payables	52,000
(b) Bank overdraft	1,21,000
TOTAL	26,73,000
II. ASSETS	
(1) Non-current assets	
Fixed assets	25,00,000
(2) Current assets	
(a) Inventories	64,440
(b) Trade receivables	1,07,325
(c) Cash and bank	1,235
TOTAL	26,73,000

Statement of Profit and Loss

	₹
Sales	15,62,000
Less: Operating expenses	9,48,000
EBIT	6,14,000
Less: Tax	2,45,600
Net operating profit after tax	3,68,400

The average rate of return of similar type of companies is 20% and risk-free rate of return is 15%. Rate of interest charged by bank is 18% and tax rate is 40%.

Calculate Economic Value Added (EVA).

[June 2016 (5 Marks)]

Ans.

Particulars	Calculations	₹
EBIT		6,14,000
Less: Interest	$(15,00,000 \times 18\%)$	(2,70,000)
EBT		3,44,000
Less: Tax @ 40%	$(3,44,000 \times 40\%)$	(1,37,600)
Profit After Tax (PAT)		2,06,400
Add: Interest $(1 - t)$	$[2,70,000 (1 - 0.4)]$	1,62,000
Net Operating Profit After Tax (NOPAT)		3,68,400
Less: Cost of Capital	$(26,21,000 \times 13.25\%)$	(3,47,233)
Economic Value Added		21,117

Cost of equity:

 $K_e =$ Average rate of return of similar companies = 20%

Cost of long-term debts:

 $i =$ Risk-free rate of return = 15%

$$K_d = i(1 - t)$$

$$= 15(1 - 0.4)$$

$$= 9\%$$

Cost of bank overdraft:

$$K_d = i(1 - t)$$

$$= 15(1 - 0.4)$$

$$= 10.08\%$$

Calculation of WACC (Book value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity share capital	10,00,000	38.15%	20.00%	763.00
Long-term debts	15,00,000	57.23%	9.00%	515.07
Bank overdraft	1,21,000	4.62%	10.08%	46.57
	26,21,000	100%		1324.64

$$WACC = \frac{1324.64}{100} = 13.25\%$$

Problem No. 11] An analyst is evaluating the stocks of two companies for inclusion in the diversified portfolio that he manages for a pension fund. He wishes to use the price/earnings multiple (PE ratio) to compare the stocks. The analyst has collected the following information about Company A and Company B:

Particulars	Company A	Company B
Historical and expected Return On Equity (ROE)	16%	11%
Historical and expected dividend payout ratio	40%	40%
Beta	1.35	1.05

The expected return on the market index is 11.5% and the expected risk-free return is 5.25%. You are required to calculate the Cost of Equity. [June 2017 (4 Marks)]

Ans.

Company A:

$$\begin{aligned}
 K_A &= R_f + \beta (R_m - R_f) \\
 &= 5.25 + 1.35 (11.5 - 5.25) \\
 &= 13.6875\%
 \end{aligned}$$

Company B:

$$\begin{aligned}
 K_B &= R_f + \beta (R_m - R_f) \\
 &= 5.25 + 1.05 (11.5 - 5.25) \\
 &= 11.8125\%
 \end{aligned}$$

Problem No. 12] Assuming that the firm pays tax at 40%, compute the Weighted Average Cost of Capital from the following:

5,000 Equity shares of ₹100 each	₹5,00,000
10% Preference Shares	₹1,00,000
12% Debentures	₹4,00,000

The current market price of the share is ₹120. The Company is expected to declare a dividend of ₹12 at the end of the current year, with an expected growth rate of 8%. Use book value weights.

[June 2017 (4 Marks)]

Ans.

$$\begin{aligned}
 K_1 &= \frac{D}{P_0} + g \\
 &= \frac{12}{120} + 0.08 \\
 &= 0.18 \text{ i.e. } 18\%
 \end{aligned}$$

$$\begin{aligned}
 K_2 &= 1(1 - 0) \\
 &= 12(1 - 0.40) \\
 &= 7.2\%
 \end{aligned}$$

Calculation of WACC:

Capital	₹	Weight	Cost of Capital	Product
Equity Capital	5,00,000	50%	18%	900
10% Preference Shares	1,00,000	10%	10%	100
12% Debentures	4,00,000	40%	7.2%	288
	10,00,000	100%		1,288

$$WACC = \frac{1,288}{100} = 12.88\%$$

Problem No. 13] Jeeyu Ltd., is incorporated as per Companies Act, 2013, one year ago, in the State of Maharashtra. The first year's operation is being successful and company has worked above the breakeven point. The management of Jeeyu is thinking to manage ₹10 lakh, from the market. To avail the benefit of trading on

equity, they are planning to make issue of debentures. The investment banker has suggested that they could issue the debentures at the face value of ₹ 100 and can offer the interest rate 11%. One of the directors has mentioned that, now-a-days investors are expecting the rate of return 12.50%. The company covered under the tax rate of 33%. You are required to work out:

- (a) The issue price of debenture in terms of per debenture, and
- (b) The effective cost of debentures from the view point of Jeeyu Ltd.

[June 2018 (4 Marks)]

Ans. The value of bond/debentures is the present value of all the future interest payments and the maturity value, discounted at the required return on bond commensurate with the prevailing interest rate and risk.

Perpetuity bonds are the bonds which never mature or have infinitive maturity period. Value of such bonds is simply the discounted value of infinite streams of interest (cash) flows. In problem redemption period is not given; so it will be treated as perpetual bond.

Symbolically,

$$\begin{aligned} \text{Value of bond} &= \frac{I}{K_e} = \frac{\text{Interest}}{\text{Required rate of return}} \\ &= \frac{11}{12.5\%} \\ &= 88 \end{aligned}$$

Thus, bond can be issued at ₹ 88.

Effective cost of debentures:

$$\begin{aligned} K_d &= \frac{I(1-t)}{NP} \quad \text{Where, NP = Net Proceeds} \\ &= \frac{11(1-0.33)}{88} \\ &= 8.375\% \end{aligned}$$

Problem No. 14] Strawberry Ltd. is an established confectionary maker company. Chairman of the Strawberry has recently attended one of the Management Development Programme in premier institution. He is willing to work out the Economic Value Added (EVA) of the firm. He has provided to you, the following information. You are required to calculate the EVA from the same.

- | | |
|----------------------------------|------------|
| 1. Profit after interest and tax | ₹ 150 lakh |
| 2. Interest | ₹ 25 lakh |
| 3. Borrowing interest rate | 10% |
| 4. Owners' cost of capital | 18% |
| 5. Net worth of the company | ₹ 300 lakh |
| 6. Tax rate applicable | 33% |
| 7. Overall cost of capital | 15% |

[June 2018 (4 Marks)]

Ans.

Particulars	₹ in lakh
Profit After Tax (PAT)	150.00
Add: Interest $\times (1 - t)$ [$25 \times (1 - 0.33)$]	16.75
Net Operating Profit After Tax (NOPAT)	166.75
Less: Cost of Capital ($300 \times 15\%$)	(45)
Economic Value Added	121.75

Problem No. 15] The following is capital structure of a firm:

Source of Finance	Amount (₹)	After Tax Cost (%)
Equity (paid-up) share capital	20,00,000	20
Retained earnings (Reserves)	40,00,000	20
Preference share capital	15,00,000	10
Debt	25,00,000	8
Total	1,00,00,000	

Compute the weighted average cost of capital of the firm, based on the existing capital structure. [Dec. 2018 (4 Marks)]

Ans.

Calculation of WACC (book value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity share capital	20,00,000	20%	20%	400
Retained earnings	40,00,000	40%	20%	800
Preference share capital	15,00,000	15%	10%	150
Debt	25,00,000	25%	8%	200
	1,00,00,000	100%		1,550

$$\text{WACC} = \frac{1,550}{100} = 15.5\%$$

Problem No. 16] The following data pertains to ABC Ltd.:

Particulars	Amount (₹)
Equity Share Capital (1,00,000 Nos.) (Market value)	38,00,000
Preference Share Capital (Book value)	8,00,000
Debentures	50,00,000

Additional Information:

- Equity Share Capital includes the existing 60,000 shares having current market price of ₹ 40 per share and the balance is net proceeds from the new issue in the current year (issue price of the share is ₹ 40; flotation cost per share is ₹ 5). The projected EPS and DPS for the current year are ₹ 8 and ₹ 5 respectively.
- Dividend on preference shares is 12%.

- (iii) Cost of debentures (pre-tax) is 11%.
 (iv) Market value of preference shares is ₹ 8,50,000.
 (v) Corporate tax rate is 35% and dividend tax rate is 10%.

You are required to compute Weighted Average Cost of Capital (WACC) using market values as weights.
 [June 2019 (4 Marks)]

Ans.

$$\begin{aligned} \text{Growth Rate} &= \frac{[\text{EPS} - \text{DPS} (1 + t)]}{P_0} \\ &= \frac{[8 - 5 (1 + 0.10)]}{40} \\ &= 6.25\% \end{aligned}$$

Cost of existing equity capital:

$$\begin{aligned} K_e &= \frac{D_1}{P_0} + g \\ &= \frac{5}{40} + 0.0625 \end{aligned}$$

$$K_e = 0.1875 \text{ i.e. } 18.75\%$$

Cost of new equity capital:

$$\begin{aligned} K_e &= \frac{D_1}{NP} + g \\ &= \frac{5}{40 - 5} + 0.0625 \end{aligned}$$

$$K_e = 0.2054 \text{ i.e. } 20.54\%$$

Cost of new preference capital:

$$\begin{aligned} K_p &= \frac{P_d (1 + t)}{P_0} \times 100 \\ &= \frac{96,000 (1 + 0.10)}{8,50,000} \times 100 \end{aligned}$$

$$K_p = 12.42\%$$

Cost of debentures:

$$\begin{aligned} K_d &= I (1 - t) \\ &= 11 (1 - 0.35) \\ &= 7.15\% \end{aligned}$$

Calculation of WACC (market value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity Capital (Old)	24,00,000	24.87%	18.75%	466.31
Equity Capital (New)	14,00,000	14.51%	20.54%	298.03
Preference Capital	8,50,000	8.81%	12.42%	109.42
Debentures	50,00,000	51.81%	7.15%	370.44
	96,50,000	100%		1,244.2

$$WACC = \frac{1,244.2}{100} = 12.44\%$$

Problem No. 17] From the following information, work out the Economic Value Added by Vije Ltd.:

Particulars	(₹ in lakh)
Shareholders Fund	4,200
Long-term Debt	1,800
Trade Payables	750
Net operating profit before interest and tax	2,150

The average rate of return expected by shareholders from similar types of companies is 20%. Risk free rate is 10%, and corporate tax rate applicable for Vije Ltd. is 30%.

[June 2019 (5 Marks)]

Ans.

Cost of equity:

$$K_e = 20\%$$

Cost of debt:

$$\text{Cost of debt after tax} = R_d (1 - t) = 10 (1 - 0.30) = 7\%$$

Particulars	(₹ in lakh)
Operating profit before interest and tax	2,150
(-) Interest (1,800 × 7%)	(126)
Profit before tax	2,024
(-) Tax @ 30%	(607.2)
Profit after tax	1,416.8
(+) Interest (1 - t) [126 × (1 - 0.30)]	88.2
Net Operating Profit After Tax (NOPAT)	1,505
(-) Cost of Capital [6,000 × 16.10%]	(966)
Economic Value Added	539

Capital	(₹ in lakh)	%	Cost of Capital	Product
Equity	4,200	70%	20%	1,400
Long-term Debt	1,800	30%	7%	210
	6,000	100.00%		1,610

$$WACC = \frac{1,610}{100} = 16.10\%$$

Problem No. 18] Calculate the weighted average cost of capital of Makkhu Ltd. from the following information:

Particulars	₹
4,00,000 Equity Shares (₹10 each fully paid-up)	40,00,000
80,000, 9% Preference Shares (₹10 each fully paid-up)	8,00,000
Retained Earnings	32,00,000
20,000, 8% Debentures (₹100 each)	20,00,000
Market price of Equity shares	45
Average earning per share of last 3 years	9
Corporate Income-tax rate applicable to Makkhu Ltd.	30%

Cost of equity can be considered as cost of retained earnings.

[June 2019 (5 Marks)]

Ans.

Cost of equity - Price Earning Method:

$$K_e = \frac{EPS}{P_0}$$

$$= \frac{9}{45}$$

$$= 0.2 \text{ i.e. } 20\%$$

Cost of 8% Debentures:

$$K_d = I(1-t)$$

$$= 8(1-0.3)$$

$$= 5.6\%$$

Calculation of WACC (book value basis):

Capital	₹	%	Cost of Capital	Product
Equity Shares	40,00,000	40%	20%	800
Retained Earnings	32,00,000	32%	20%	640
9% Preference Shares	8,00,000	8%	9%	72
8% Debentures	20,00,000	20%	5.6%	112
	1,00,00,000	100%		1,624

$$WACC = \frac{1.624}{100} = 16.24\%$$

Problem No. 19] Z Ltd. provides you the following information:

Equity Share Capital	₹ 200 lakh
8% Secured Loan	₹ 40 lakh
10% Unsecured Loan	₹ 60 lakh
Total Capital Employed	₹ 300 lakh
Net Operating Profit After Tax	₹ 31,66,000
Rate of Tax	40%
Cost of Equity	12%

You are required to calculate Economic Value Added for Z Ltd.

[June 2021 (3 Marks)]

Ans.

Cost of 8% Secured Loan:

$$\begin{aligned} K_d &= I(1 - t) \\ &= 8(1 - 0.4) \\ &= 4.8\% \end{aligned}$$

Cost of 10% Unsecured Loan:

$$\begin{aligned} K_d &= I(1 - t) \\ &= 10(1 - 0.4) \\ &= 6\% \end{aligned}$$

Calculation of WACC (book value basis):

Capital	₹ in lakh	%	Cost of Capital	Product
Equity Share Capital	200	66.67%	12%	800
8% Secured Loan	40	13.33%	4.8%	64
10% Unsecured Loan	60	20%	6%	120
	300	100.00%		984

$$WACC = \frac{984}{100} = 9.84\%$$

Particulars	₹ in lakh
Net Operating Profit After Tax [NOPAT]	31.66
(-) Cost of Capital (300 × 9.84%)	(29.52)
Economic Value Added [EVA]	2.14

Problem No. 20] Following is the capital structure of PQ Gems Ltd.:

Source of finance	Amount (₹)	Cost of Capital after tax (%)
Equity capital (45,000 shares)	4,50,000	14
Retained earnings	1,50,000	14
10% Preference capital	1,00,000	10
9% Debentures	3,00,000	4.5

You are required to calculate the Weighted Average Cost of Capital:

- (a) Based on book values as weights.
 (b) Based on market values as weights (Assuming that the market price of equity share is ₹ 20 per share)

[Dec. 2020 (4 Marks)]

Ans.

Calculation of WACC (book value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity capital	4,50,000	45%	14%	630
Retained earnings	1,50,000	15%	14%	210
10% Preference capital	1,00,000	10%	10%	100
9% Debentures	3,00,000	30%	4.5%	135
	10,00,000	100%		1,075

$$\text{WACC} = \frac{1,075}{100} = 10.75\%$$

Calculation of WACC (market value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity capital	9,00,000	69.23%	14%	969.22
10% Preference capital	1,00,000	7.69%	10%	76.9
9% Debentures	3,00,000	23.08%	4.5%	103.86
	13,00,000	100%		1,149.98

$$\text{WACC} = \frac{1,149.98}{100} = 11.50\%$$

Problem No. 21] ABC Ltd. has furnished the following information:

Earnings Per Share (EPS)	₹ 4
Dividend Payout Ratio	25%
Market Price Per Share	₹ 40
Rate of Tax	30%
Growth rate of dividend	8%

The company wants to raise additional capital of ₹ 10 lakh including debt of ₹ 4 lakh. The cost of debt (before tax) is 10% up to ₹ 2 lakh and 15% beyond that. Compute the after tax cost of equity and debt and the Weighted Average Cost of Capital.

[June 2021 (4 Marks)]

Ans.

Cost of equity - Dividend Growth Method:

$$D = 4 \times 25\% = 1$$

$$K_e = \frac{D}{P_0} + g$$

$$= \frac{1}{40} + 0.08$$

$$= 0.107 \text{ i.e. } 10.5\%$$

Cost of 10% Debt:

$$K_d = I(1 - t)$$

$$= 10(1 - 0.3)$$

$$= 7\%$$

Cost of 15% Debt:

$$K_d = I(1 - t)$$

$$= 15(1 - 0.3)$$

$$= 10.5\%$$

Calculation of WACC for additional capital of ₹ 10 lakh:

Types of capital	₹	%	Cost of Capital	Product
Equity Share Capital	6,00,000	60%	10.5%	630
10% Debt	2,00,000	20%	7%	140
15% Debt	2,00,000	20%	10.5%	210
	10,00,000	100%		980

$$WACC = \frac{980}{100} = 9.8\%$$

NOTE: K_e can be computed alternatively with taking growth rate into consideration $[(D/P_0) + g]$. The values of K_e and WACC then would change accordingly as 10.7% and 9.92% respectively.

Problem No. 22] Following information is available of a concern. Calculate Economic Value Added (EVA):

- | | |
|----------------------------|---------------|
| (i) 12% Debt capital | ₹ 2,000 Crore |
| (ii) Equity capital | ₹ 500 Crore |
| (iii) Reserve and Surplus | ₹ 7,500 Crore |
| (iv) Risk Free rate | 9% |
| (v) Beta Factor | 1.05 |
| (vi) Market rate of return | 19% |

(vii) Net operating profit after tax ₹ 2,100 Crore
 (viii) Tax rate 30% [Dec. 2021 (4 Marks)]

Ans.

Particulars	₹ in Crore
Net Operating Profit After Tax [NOPAT]	2,100
(-) Cost of Capital (10,000 × 17.28%)	(1,728)
Economic Value Added [EVA]	372

Calculation of cost of equity:

$$\begin{aligned}
 K_e &= R_f + \beta (R_m - R_f) \\
 &= 9 + 1.05 (19 - 9) \\
 &= 19.5\%
 \end{aligned}$$

Calculation of cost of debts:

$$\begin{aligned}
 K_d &= I (1 - t) \\
 &= 12 (1 - 0.30) \\
 &= 8.4\%
 \end{aligned}$$

Capital	₹ in Crore	%	Cost of Capital	Product
Equity	8,000	80%	19.5%	1,560
12% Debt	2,000	20%	8.4%	168
	10,000	100%		1,728

$$WACC = \frac{1,728}{100} = 17.28\%$$

CAPITAL STRUCTURE & LEVERAGES

UNIT-I: CAPITAL STRUCTURE DECISIONS

THEORETICAL QUESTIONS

Q. 1. Distinguish between: Financial Structure & Capital Structure.
 [June 2009 (5 Marks)], [Dec. 2011 (5 Marks)]
 [Dec. 2013 (5 Marks)], [June 2016 (5 Marks)]
 [June 2019 (4 Marks)]

Ans.
 Following are the main points of difference between financial structure and capital structure:

Points	Financial Structure	Capital Structure
Meaning	Financial structure consists of all assets, all liabilities and the capital. The manner in which an organization's assets are financed is referred to as its financial structure.	Capital structure is the sum total of all long-term sources of capital and thus is a part of the financial structure. It includes debentures, long term debt, preference share capital, equity share capital and retained earnings. In the simplest of terms, capital structure of a company is that part of financial structure that reflects long-term sources of capital.
Creation of assets	Financial structure involves creation of both long-term and short-term assets.	Capital structure relates to long-term capital deployment for creation of long-term assets.
Size	Financial structure is boarder concept.	Capital structure is narrow concept.

Q. 2. "The choice of an appropriate debt policy involves a trade-off between tax benefits and the cost of financial distress." Comment. [Dec. 2006 (5 Marks)]

Ans. Capital structure is significant for a firm because the long term profitability and solvency of the firm is sustained by an optimal capital structure consisting of an appropriate mix of debt and equity.

While deciding about capital structure, the debt proportion needs to be appropriate. High proportion of debt in capital structure leads to high interest burden on the company, it reduces the taxable income and thus reduces taxable income but at the same time due high debt funds equity funds will be less and hence also increases the EPS of the company.

Though high debt funds in capital structure increases EPS but one cannot ignore the risk involved on it. High debt funds also increases the operating or business risk of the company and may lead to financial distress and bankruptcy. Thus, management has to strike a proper balance between owned funds and debt funds.

Q. 3. Write a short note on: Vertical Capital Structure. [Dec. 2008 (5 Marks)]

Or

'Vertical capital structure' and 'pyramid shaped capital structure' exhibit opposite dimensions in analyzing its utility. Discuss. [Dec. 2014 (4 Marks)]

Ans. Capital structure can be of various kinds as described below:

- (1) **Horizontal Capital Structure:** In a Horizontal capital structure, the firm has zero debt components. The structure is quite stable. Expansion of the firm takes in a lateral manner, i.e. through equity or retained earning only. The absence of debt results in the lack of financial leverage. Probability of disturbance of the structure is remote.
- (2) **Vertical Capital Structure:** In a vertical capital structure, the base of the structure is formed by a **small amount of equity share capital**. This base serves as the foundation on which the super structure of preference share capital and debt is built. The incremental addition in the capital structure is almost entirely in the form of debt. Quantum of retained earnings is low and the dividend pay-out ratio is quite high. In such a structure, the cost of equity capital is usually higher than the cost of debt. The **high component of debt** in the capital structure increases the financial risk of the firm and renders the structure unstable. The firm, because of the relatively lesser component of equity capital, is vulnerable to hostile takeovers.
- (3) **Pyramid Shaped Capital Structure:** A pyramid shaped capital structure has a large proportion consisting of equity capital and retained earnings which have been ploughed back into the firm over a considerably large period of time. The cost of share capital and the retained earnings of the firm are usually lower than the cost of debt. This structure is indicative of risk averse conservative firms.
- (4) **Inverted Pyramid Shaped Capital Structure:** Such a capital structure has a small component of equity capital, reasonable level of retained earnings but an ever increasing component of debt. All the increases in the capital structure in the recent past have been made through debt only. Chances are that the retained earnings of the firm are shrinking due to accumulating losses. Such a capital structure is highly vulnerable to collapse.

Q. 4. Discuss the concept of "optimum capital structure". [Dec. 2009 (5 Marks)], [June 2012 (5 Marks)] [June 2015 (5 Marks)], [Dec. 2015 (5 Marks)]

Ans. Optimum capital structure deals with the issue of right mix of debt and equity in the long-term capital structure of a firm. According to this, if a company takes on debt, the value of the firm increases up to a certain point. Beyond that value of the firm will start to decrease.

If the company is unable to pay the debt within the specified period then it will affect the goodwill of the company in the market.

Therefore, company should select its appropriate capital structure with due consideration of all factors.

Q. 5. While deciding upon the capital structure, the firm has to consider the different life cycle stages. Comment.
[June 2010 (5 Marks)]

Ans. The firm has to consider the following life cycle stages while deciding upon the capital structure:

- Pioneering Stage:** It is the starting stage when there is rapid increase in demand for the product/services of company. At this stage only efficient companies survive. Due to risk perception about the company the cost of borrowing is high. To survive in this stage, capital structure is more oriented towards equity and avail more soft loans.
- Expansion Stage:** In this stage strong companies having survived the competition struggle successfully expand their market share and volumes. For this requirement of funds is high. Therefore, the company in this stage resorts to financial leverage.
- Stabilization/Stagnation Stage:** In this stage, management looks out for expansion and diversification into new projects. Takeovers, mergers, acquisition and strategic alliances are main activities. In this stage, capital structure depends on these activities.

Q. 6. Distinguish between: Horizontal Capital Structure & Vertical Capital Structure.
[June 2011 (5 Marks)]

Ans. Following are the main points of difference between horizontal capital structure & vertical capital structure:

Points	Horizontal Capital Structure	Vertical Capital Structure
Meaning	In a Horizontal capital structure, the firm has zero debt components in the structure mix.	In a vertical capital structure, the base of the structure is formed by a small amount of equity share capital . This base serves as the foundation on which the super structure of preference share capital and debt is built.
Expansion/addition	Expansion of the firm takes in a lateral manner, i.e. through equity or retained earning only.	The incremental addition in the capital structure is almost entirely in the form of debt.
Risk	The absence of debt it results in the lack of financial leverage and hence low financial risk.	The high financial leverage in the capital structure increases the financial risk of the firm and renders the structure unstable.
EPS	Low EPS.	High EPS.

Q. 7. Financial gearing is a double-edged sword. Comment. [Dec. 2011 (5 Marks)]

Or

Financial gearing is a fair weather friend. Comment. [Dec. 2013 (5 Marks)]

Ans. Using *borrowed funds* or *fixed cost funds* in the capital structure of a company is called financial gearing. High financial gearing will increase the EPS of the company if earnings before interest and taxes are rising, as compared to the EPS of the company with low or no financial gearing. It may be understood that leverage and gearing are used interchangeably.

So at times when the economy is doing well, the shareholders of a highly geared company will do better than the shareholders of a low geared company. However, if the company is not doing well, when its profits before interest and taxes are falling, EPS of highly geared company will fall faster than those of the low geared company.

Higher the level of financial gearing, the greater will be the risk. Those who take risk should appreciate that in difficult times their reward will be below average but in good times they will receive above average rewards. The lower the levels of financial gearing, the more conservative are the financial policies of the company and the less will be deviations over time to earnings per share. Hence, financial gearing is a double-edged sword.

Q. 8. A firm's stock price is not related to its mix of debt and equity financing. Comment. [June 2011 (5 Marks)], [June 2015 (5 Marks)]

Ans. Theory of modern financial management – by Franco Modigliani and Merton Miller concluded that the value of a firm depends solely on its future earnings stream, and hence its value is unaffected by its debt/equity mix. They concluded that a firm's value stems from its assets, regardless of how those assets are financed.

The theory was based on restrictive set of assumptions, including perfect capital market (which implies zero taxes). They used an arbitrage proof to demonstrate that capital structure is irrelevant. If debt financing resulted in a higher value for the firm than equity financing, then investors who owned shares in a leveraged (debt-financed) firm could increase their income by selling those shares and using the proceeds, plus borrowed funds, to buy shares in an unleveraged (all equity-financed) firm. The simultaneous selling of shares in the leveraged firm and buying of shares in the unleveraged firm would drive the prices of the stocks to the point where the values of the two firms would be identical. Thus, according to MM Hypothesis, a firm's stock price is not related to its mix of debt and equity financing.

Q. 9. Distinguish between: Net Income Approach and Net Operating Income Approach.

[Dec. 2011 (5 Marks)], [Dec. 2014 (4 Marks)],

[June 2015 (5 Marks)]

Ans.

Following are the main points of difference between net income approach and net operating income approach:

Points Meaning	Net Income Approach	Net Operating Income Approach
	According to this approach, capital structure decision is relevant to the value of the firm.	According to this approach, capital structure decisions of the firm are irrelevant. As a result, the division between debt and equity is irrelevant.
Increase or decrease in financial leverage	An increase in financial leverage will lead to decline in the weighted average cost of capital, while the value of the firm as well as market price of ordinary share will increase. Conversely a decrease in the leverage will cause an increase in the overall cost of capital and a consequent decline in the value as well as market price of equity shares.	Any change in the leverage will not lead to any change in the total value of the firm and the market price of shares, as the overall cost of capital is independent of the degree of leverage. An increase in the use of debt which is apparently cheaper is offset by an increase in the equity capitalization rate. This happens because equity investors seek higher compensation as they are opposed to greater risk due to the existence of fixed return securities in the capital structure.
Change in capital	According to this approach, the firm can increase its total value by decreasing its overall cost of capital through increasing the degree of leverage.	According to this approach, changes in capital do not lead to change in overall cost of capital.
Conclusion	The significant conclusion of this approach is that it pleads for the firm to employ as much debt as possible to maximize its value.	According to this approach, capital structure decisions of the firm are irrelevant. Hence employment more debt does increase the overall value of the firm.

Q. 10. Write a short note on: Net Income Approach.

[June 2014 (5 Marks)]

Ans. According to this approach, capital structure decision is relevant to the value of the firm. An increase in financial leverage will lead to decline in the weighted average cost of capital, while the value of the firm as well as market price of ordinary share will increase. Conversely a decrease in the leverage will cause an increase in the overall cost of capital and a consequent decline in the value as well as market price of equity shares.

The value of the firm on the basis of Net Income Approach can be ascertained as follows:

$$V = S + D$$

Where,

V = Value of the firm

S = Market value of equity

D = Market value of debt

$$\text{Market value of equity (S)} = \frac{\text{Net Income}}{K_e}$$

Net income = Earnings available for equity shareholders

K_e = Equity capitalization rate

Under, NI approach, the value of the firm will be maximum at a point where weighted average cost of capital is minimum. Thus, the theory suggests total or maximum possible

debt financing for minimizing the cost of capital. The overall cost of capital under this approach is:

$$\text{Overall cost of capital} = \frac{\text{EBIT}}{\text{Value of firm}}$$

Thus, according to this approach, the firm can increase its total value by decreasing its overall cost of capital through increasing the degree of leverage. The significant conclusion of this approach is that it pleads for the firm to employ as much debt as possible to maximize its value.

Example: R Ltd.'s EBIT is ₹ 5,00,000. The company has 10%, ₹ 20,00,000 debentures. The equity capitalization rate i.e. K_e is 16%.

Statement showing value of firm

Net operating income/EBIT	5,00,000
(-) Interest on debentures (20,00,000 × 10%)	(2,00,000)
Earnings available for equity holders i.e. (NI)	3,00,000
Equity capitalization rate (K_e)	16%
Market value of equity (3,00,000/16%)	18,75,000
Market value of debt	20,00,000
Total value of firm $V = S + D$	38,75,000

$$\text{Overall cost of capital} = \frac{\text{EBIT}}{\text{Value of firm}} = \frac{5,00,000}{38,75,000} = 12.90\%$$

Q. 11. The nature of the industry plays an important role in capital structure decisions. Comment. [Dec. 2015 (5 Marks)]

Ans. Capital structure is influenced by the industry to which a company is related.

All companies related to a given industry produce almost similar products, their costs of production are similar; they depend on identical technology, they have similar profitability, and hence the pattern of their capital structure is almost similar. Because of this fact, there are different debt-equity ratios prevalent in different industries.

Hence, at the time of raising funds a company must take into consideration debt-equity ratio prevalent in the related industry.

Q. 12. Explain 'pecking order hypothesis' relevant to capital structure planning. [Dec. 2015 (4 Marks)]

Ans. In corporate finance, pecking order theory postulates that the cost of financing increases with asymmetric information.

Financing comes from three sources, internal funds, debt and new equity. Companies prioritize their sources of financing, first preferring internal financing, and then debt, lastly raising equity as a "last resort". Hence, internal financing is used first; when that is depleted, then debt is issued; and when it is no longer sensible to issue any more debt, equity is issued. This theory maintains that businesses adhere to a hierarchy of financing sources and prefer internal financing when available, and debt is preferred over equity if external financing is required. Thus, the form of debt a firm chooses can act as a signal of its need for external finance.

The pecking order theory is popularized by Myers and Majluf (1984) where they argue that equity is a less preferred means to raise capital because when managers issue new equity, investors believe that managers think that the firm is overvalued and managers are taking advantage of this over-valuation. As a result, investors will place a lower value to the new equity issuance.

Q. 13. "Modigliani-Miller theory amplifies that value of the levered firm is same as value of the unlevered firm." Under which circumstances this proposition can be proved. [June 2016 (5 Marks)]

Ans. The propositions made by Modigliani and Miller are:

- (i) **Proposition I:** The total market value of a firm and its cost of capital are independent of its capital structure. The total market value of the firm is given by capitalising the expected stream of operating earnings at a discount rate considered appropriate for its risk class.
- (ii) **Proposition II:** The cost of equity (K_e) is equal to capitalization rate of pure equity stream plus a premium for financial risk. The financial risk increases with more debt content in the capital structure. As a result, K_e increases in a manner to offset exactly the use of less expensive source of funds.
- (iii) **Proposition III:** The cut-off rate for investment decision making for a firm in a given risk class is not affected by the manner in which the investment is financed. It emphasizes the point that investment and financing decisions are independent because the average cost of capital is not affected by the financing decision.

Assumptions: MM approach is based on the following assumptions.

- (1) Capital markets are perfect.
- (2) All information is freely available and there is no transaction cost.
- (3) All investors are rational.
- (4) Investors have homogenous expectations. They hold identical subjective probability distributions about future operating earnings.
- (5) No existence of corporate taxes. (*MM removed this assumption later on*).
- (6) Firms can be grouped into "Equivalent risk classes" on the basis of their business risk.

According to MM, the total value of a firm is not affected by its capital structure *i.e.* the total value of the firm remains the same irrespective of its financing mix. The support for this hypothesis lies in the presence of arbitrage in the capital markets. They argue that through personal arbitrage, investors would quickly eliminate any inequalities between the value of levered firms and the value of unlevered firms in the same risk class. They contend that arbitrageurs will substitute personal leverage for corporate leverage. The basic argument is that individuals (arbitrageurs) through the use of personal leverage can alter corporate leverage. This argument is not tenable in the practical world, because it is extremely doubtful that personal investors would substitute personal leverage for corporate leverage, since they do not have the same risk characteristics. M&M assumed the availability of free and up to date information. This is also not normally valid.

Criticism of MM Hypothesis: If the MM theory was correct, managers would not need to concern themselves with capital structure decisions, because such decisions would have no impact on stock prices. However, like most theories, MM's results would hold true

only under a particular set of assumptions. Still, by showing the conditions under which capital structure is irrelevant, MM provided important insights into when and how debt financing can affect the value of a firm.

Q. 14. Differentiate between: Pyramid Shaped Capital Structure and Inverted Pyramid Shaped Capital Structure. [June 2017 (4 Marks)]

Ans. Pyramid shaped Capital structure: A pyramid shaped capital structure has a large proportion of equity capital and retained earnings which have been ploughed back into the firm over a considerably long period of time. The cost of equity and the retained earnings of the firm is usually lower than the cost of debt. This structure is indicative of risk averse conservative firms.

Inverted Pyramid shaped Capital Structure: Such a capital structure has a small component of equity capital, reasonable level of retained earnings but an ever increasing component of debt. All the increases in the capital structure in the recent past have been made through debt only. Chances are that the retained earnings of the firm are shrinking due to accumulating losses. Such a capital structure is highly vulnerable to collapse.

Q. 15. The capital structure is significant for the overall ranking of the firm in the industry group. Discuss. [Dec. 2021 (4 Marks)]

Ans.

Capital structure is significant for a firm because the long term profitability and solvency of the firm is sustained by an optimal capital structure consisting of an appropriate mix of debt and equity. The capital structure also is significant for the overall ranking of the firm in the industry group. The significance of the capital structure is discussed below:

1. **It reflects the firm's strategy:** The capital structure reflects the overall strategy of the firm. The strategy includes the pace of growth of the firm. In case the firm wants to grow at a faster pace, it would be required to incorporate debt in its capital structure to a greater extent. Further, in case of growth through acquisitions or the inorganic mode of growth as it is called, the firm would find that financial leverage is an important tool in funding the acquisitions.
2. **It is an indicator of the risk profile of the firm:** One can get a reasonably accurate broad idea about the risk profile of the firm from its capital structure. If the debt component in the capital structure is predominant, the fixed interest cost of the firm increases thereby increasing its risk. If the firm has no long term debt in its capital structure, it means that either it is risk averse or it has cost of equity capital or cost of retained earnings less than the cost of debt.
3. **It acts as a tax management tool:** The capital structure acts as a tax management tool also. Since the interest on borrowings is tax deductible, a firm having healthy growth in operating profits would find it worthwhile to incorporate debt in the capital structure in a greater measure.
4. **It helps to brighten the image of the firm:** A firm can build on the retained earnings component of the capital structure by issuing equity capital at a premium to a spread out base of small investors. Such an act has two benefits. On the one hand, it helps the firm to improve its image in the eyes of the investors. At the same time, it reduces chances of hostile take-over of the firm.

PROBLEMS & SOLUTIONS

Problem No. 1] Distance Sensor Ltd. is an all equity financed company with a market value of ₹ 35,00,000 and cost of equity, $K_e = 20\%$. The company wants to buy-back equity shares worth ₹ 8,00,000 by issuing and raising 10% perpetual debt of the same amount. Rate of tax may be taken at 35%.

Applying the MM Model (with taxes), how would the capital restructuring affect -

- (a) Market value of Distance Sensor Ltd.
- (b) Cost of equity (K_e)
- (c) Weighted average cost of capital (WACC) of the company.

[Dec. 2009 (10 Marks)], [Dec. 2014 (4 Marks)]

Ans.

Computation of EBIT of the unlevered company:

Particulars	₹
EBIT	10,76,923
(-) Interest	-
EBT	10,76,923
(-) Tax @ 35%	(3,76,923)
PAT	7,00,000
Capitalization rate	20%
Market value of equity (PAT/Capitalization rate) × 100 (given)	35,00,000

Perform reverse calculation to find out EBIT.

Particulars	All Equity	Equity + Debt
EBIT	10,76,923	10,76,923
(-) Interest	-	(80,000)
EBT	10,76,923	9,96,923
(-) Tax @ 35%	(3,76,923)	(3,48,923)
PAT	7,00,000	6,48,000

According to MM, the value of levered firm would exceed that of the unlevered firm by an amount equal to the levered firms debt multiplied by the tax rate.

Value of unlevered firm + (Value of debt × Tax rate) = Total Value

Value of the company with ₹ 8,00,000 in debt:

$$35,00,000 + (8,00,000 \times 35\%) = 37,80,000$$

Total value - Value of debt = Value of equity

$$37,80,000 - 8,00,000 = 29,80,000$$

$$K_e = \frac{D}{P_0} = \frac{6,48,000}{29,80,000} = 0.2175 \text{ i.e. } 21.75\%$$

Cost of debt:

$$K_d = I(1 - t)$$

$$= 10(1 - 0.35)$$

$$= 6.5\%$$

Calculation of overall cost of capital (market value basis):

Types of capital	₹	%	Cost of Capital	Product
Equity Share Capital	29,80,000	78.84%	21.75%	1,714.77
15% Debt	8,00,000	21.16%	6.5%	137.54
	37,80,000	100%		1,852.31

$$WACC = \frac{1,852.31}{100} = 18.52\%$$

Problem No. 2] Maxwell Ltd. is operating in electronic equipments development and its sales and EBIT for the current year were ₹70,00,000 and ₹18,00,000 respectively. During the year, interest expense was ₹16,000 and preference dividend was ₹20,000. These fixed charges are expected to continue for the next year. The company is thinking to diversify its operations which will require ₹7,00,000 and is expected to increase EBIT by ₹4,00,000 to ₹22,00,000.

The company has the following three financing alternatives under its considerations:

Alternative-1: Issue 10,000 equity shares at ₹70 per share. The company has currently 80,000 shares of common stock outstanding.

Alternative-2: Issue ₹7,00,000, 15 years 15% debentures. Sinking fund payments on these debentures will commence after 15 years.

Alternative-3: Issue ₹7,00,000, 14% preference shares.

You are required to calculate -

- The EPS at the expected earnings before interest and taxes level of ₹22,00,000 for each financing alternative.
- The equivalency level of earnings before interest and taxes between the debt and common stock alternatives.
- The equivalency level of earnings before interest and taxes between the preference shares and common stock alternatives.

Assume 30% income-tax rate. [June 2012 (12 Marks)], [Dec. 2014 (8 Marks)]

Ans.

Capital structure for new finance:

Particulars	Alternative 1	Alternative 2	Alternative 3
Equity Share Capital	1,00,000	-	-
Securities Premium	6,00,000	-	-
15% Debts	-	7,00,000	-
14% Preference Shares	-	-	7,00,000
	7,00,000	7,00,000	7,00,000

Statement showing profit available for equity shareholder and EPS:

Particulars	Present	Alternative 1	Alternative 2	Alternative 3
EBIT	18,00,000	22,00,000	22,00,000	22,00,000
(-) Interest				
- Existing	(16,000)	(16,000)	(16,000)	(16,000)
- New	-	-	(1,05,000)	-
EBT	17,84,000	21,84,000	20,79,000	21,84,000
(-) Tax @ 30%	(5,35,200)	(6,55,200)	(6,23,700)	(6,55,200)
PAT	12,48,800	15,28,800	14,55,300	15,28,800
(-) Preference dividend				
- Existing	(20,000)	(20,000)	(20,000)	(20,000)
- New	-	-	-	(98,000)
Profit for equity shareholders	12,28,800	15,08,800	14,35,300	14,10,800
No. of equity shares	80,000	90,000	80,000	80,000
EPS	15.36	16.76	17.94	17.64

Calculation of indifferent point between Alternative 1 & 2:

$$\frac{(\text{EBIT} - I)(1 - t) - D_p}{N_1} = \frac{(\text{EBIT} - I)(1 - t) - D_p}{N_2}$$

Let the EBIT be 'x'.

$$\frac{(x - 16,000)(1 - 0.3) - 20,000}{90,000} = \frac{(x - 1,21,000)(1 - 0.3) - 20,000}{80,000}$$

$$\frac{0.7x - 31,200}{9} = \frac{0.7x - 1,04,700}{8}$$

$$5.6x - 2,49,600 = 6.3x - 9,42,300$$

$$-0.7x = -6,92,700$$

$$x = \text{EBIT} = 9,89,571$$

Calculation of indifferent point between Alternative 1 & 3:

$$\frac{(\text{EBIT} - I)(1 - t) - D_p}{N_1} = \frac{(\text{EBIT} - I)(1 - t) - D_p}{N_2}$$

Let the EBIT be 'x'.

$$\frac{(x - 16,000)(1 - 0.3) - 20,000}{90,000} = \frac{(x - 16,000)(1 - 0.3) - 1,18,000}{80,000}$$

$$\frac{0.7x - 31,200}{9} = \frac{0.7x - 1,29,200}{8}$$

$$5.6x - 2,49,600 = 6.3x - 11,62,800$$

$$-0.7x = -9,13,200$$

$$x = \text{EBIT} = 13,04,571$$

Problem No. 3] Ruta Max Ltd. and Buta Max Ltd. operate in the same risk class and are identical in all respect except that Ruta Max Ltd. uses debt financing while Buta Max Ltd. does not opt for debt financing.

Ruta Max Ltd. has ₹25,00,000 debentures carrying coupon rate of 10%. Both the companies earn 20% profit before interest and taxes on their total assets of ₹50 lakh. Assume perfect capital markets and rational investors and so on. The capitalization rate for an all equity company is 15%. The corporate tax rate is 30%.

You are required to compute the value of both companies according to net income (NI) and net operating income (NOI) approach. [June 2012 (8 Marks)]

Ans.

Capital structure of Company Ruta Max Ltd. & Buta Max Ltd.:

Particulars	Ruta Max Ltd.	Buta Max Ltd.
Equity Share Capital	25,00,000	50,00,000
10% Debenture	25,00,000	-
Total Assets	50,00,000	50,00,000

Calculation of total market value Net Income Approach:

Particulars	Ruta Max Ltd.	Buta Max Ltd.
EBIT	10,00,000	10,00,000
(-) Interest	(2,50,000)	-
EBT	7,50,000	10,00,000
(-) Tax @ 30%	(2,25,000)	(3,00,000)
PAT/Net income available to equity shareholders	5,25,000	7,00,000
Capitalization rate	15%	15%
Market value of equity (NI/Capitalization rate) × 100	35,00,000	46,66,667
Value of debt	25,00,000	-
Total Market Value	60,00,000	46,66,667

Calculation of total market value Net Operating Income Approach:

Particulars	Ruta Max Ltd.	Buta Max Ltd.
Capitalization of earning = $\left[\frac{10,00,000 (1 - 0.3)}{15\%} \right]$	46,66,667	46,66,667
(-) Post tax value of debt $25,00,000 (1 - 0.5)$	(17,50,000)	-
Value of equity	29,16,667	46,66,667
(+) Value of debt	25,00,000	-
	54,16,667	46,66,667

Problem No. 4] Syntex Ltd. is planning an expansion programme which will require ₹30 Crore and can be funded through any of the following three options:

Option 1: Issue further equity shares of ₹100 each.

Option 2: Raise debt at 15% interest.

Option 3: Issue preference shares at 12%.

Present paid-up capital is ₹ 60 Crore and average annual earnings before interest and taxes (EBIT) is ₹ 12 Crore. Company's income tax rate is 30%. After the expansion, annual EBIT is expected to be ₹ 15 Crore.

You are required to -

- (i) Calculate the earnings per share (EPS) under the three financing options indicating the alternative giving the highest return to the equity shareholders.
- (ii) Calculate the equivalency level of EBIT between the equity share capital and debt alternatives.

[June 2013 (12 Marks)]

Ans. Capital structure for new finance: (₹ in Crore)

Particulars	Option 1	Option 2	Option 3
Equity Share Capital	30	-	-
15% Debts	-	30	-
12% Preference Shares	-	-	30
	30	30	30

Statement showing profit available for equity shareholder and EPS:

Particulars	Option 1	Option 2	Option 3
EBIT	15.00	15.00	15.00
(-) Interest	-	(4.50)	-
EBT	15.00	10.50	15.00
(-) Tax @ 30%	(4.50)	(3.15)	(4.50)
PAT	10.50	7.35	10.50
(-) Preference dividend	-	-	(3.60)
Profit for equity shareholders	10.50	7.35	6.90
No. of equity shares (in Crore)	0.9	0.6	0.6
EPS	11.67	12.25	11.50

Analysis: Option 2 has high EPS, hence Option 2 i.e. debt financing is recommended.

Calculation of indifferent point between Option 1 & 2:

$$\frac{(EBIT - I) (1 - t) - D_p}{N_1} = \frac{(EBIT - I) (1 - t) - D_p}{N_2}$$

Let the EBIT be 'x'.

$$\frac{(x - 0) (1 - 0.3)}{0.9} = \frac{(x - 4.5) (1 - 0.3)}{0.6}$$

$$\frac{0.7x}{0.9} = \frac{0.7x - 3.15}{0.6}$$

$$0.42x = 0.63x - 2.835$$

$$-0.21x = -2.835$$

$$x = EBIT = 13.5 \text{ Crore}$$

Problem No. 5] Simplex Co. Ltd. is considering an expansion programme which is expected to cost ₹ 10,00,000. The company can finance either through debt or equity. Its current financing plan is given as under:

Particulars	₹
Equity capital (50,000 shares @ ₹ 10 each)	5,00,000
Reserves and surplus	2,00,000
Debt (10%)	3,00,000
Total	10,00,000

The latest income statement reveals the following information:

Particulars	₹
Sales	64,00,000
Less: total costs	59,00,000
EBIT	5,00,000
Less: interest	30,000
EBT	4,70,000
Less: income-tax @ 50%	2,35,000
EAT	2,35,000

The expansion programme is expected to generate additional sales of ₹ 16,00,000 with a return of 15% on sales before interest and taxes. If the expansion is financed through debt, the rate of new debt will be 12% and the price-earnings ratio will be 4 times.

If the expansion programme is financed through equity shares, i.e., the new shares can be sold at a price of ₹ 40 and the price-earnings ratio will be 5 times.

Which form of financing should the company choose, if the objective of financial management in the company is maximization of shareholders' wealth?

[Dec. 2014 (8 Marks)]

Ans.

Capital structure for new finance:

Particulars	Option 1	Option 2
12% Debts	10,00,000	-
Equity Share Capital	-	2,50,000
Securities Premium	-	7,50,000
	10,00,000	10,00,000

Statement showing profit available for equity shareholder and EPS:

Particulars	Option 1	Option 2
EBIT [5,00,000 + (16,00,000 × 15%)]	7,40,000	7,40,000
(-) Interest		
- Existing	(30,000)	(30,000)
- New	(1,20,000)	-
EBT	5,90,000	7,10,000
(-) Tax @ 50%	(2,95,000)	(3,55,000)
PAT/Profit for equity shareholders	2,95,000	3,55,000
No. of equity shares	50,000	75,000
EPS	5.9	4.73
P/E Ratio	4	5
Market Price	23.6	23.67

Analysis: Though there is a marginal difference in market value of shares under Option I & II, it is advised to the company to go with Option II i.e. equity financing in view of higher EPS.

Problem No. 6] Following is the data regarding two companies, Company A and Company B, belonging to the same risk class:

	Company A	Company B
Number of equity shares	1,00,000	2,00,000
Market price per share (₹)	15	7
10% Debentures (₹)	2,00,000	-
Profit before interest (₹)	1,20,000	1,20,000

Dividend payout ratio is 100%. Explain how under Modigliani & Miller approach, Ramesh, an investor, holding 10% of shares in Company A will be better off in switching his holding to Company B. [Dec. 2014 (4 Marks)]

Ans.

Particulars	Company A	Company B
Profit before interest	1,20,000	1,20,000
(-) Interest	(20,000)	-
Net Profit	1,00,000	1,20,000

An investor owns 10% shares of Company-A.

He sells his shares for ₹ 1,50,000 ($1,00,000 \times 15 \times 10\%$).

He wishes to purchase 10% equity shares in Company-B which will cost him ₹ 1,40,000 ($2,00,000 \times 7 \times 10\%$)

He invests ₹ 1,40,000 ₹ 10% equity shares in Company-B.

Particulars	P Ltd.	Q Ltd.
Dividend income (10% of net profit)	10,000	12,000

Thus, the income of the investor increases by switching from Company-A to Company-B and surplus funds left are ₹ 10,000 ($1,50,000 - 1,40,000$).

Problem No. 7] Jakarta Ltd. is considering financing an expansion project of ₹ 100 lakh. The finance manager has worked out the two options by studying the macro factors of the economy, and also the operating performance of the company. The present tax rate applicable to company is 30%. The details of present position and different financing plans are as under.

Particulars	Present position and Financial plans
Present	20 lakh equity shares and debentures of ₹ 50 lakh carrying interest rate 8%
Plan A	Issue of Equity shares at the rate of ₹ 12.50 The expected Price earnings Ratio: 14
Plan B	Issuance of Debentures carrying interest rate 14%. The expected Price earnings Ratio: 12

From the above information, calculate the indifference point at which EPS would be the same by both plan. [June 2018 (4 Marks)]

Ans.

Capital structure:

Particulars	₹ in lakh	
	Plan A	Plan B
Existing capital:		
Equity share capital	200	200
8% Debentures	50	50
	50	50
New Finance:		
Equity share capital	80	-
Securities premium	20	-
14% Debentures	-	100
	100	100
Total equity shares	28	20

$$\frac{(\text{EBIT} - I)(1 - t) - D_p}{N} = \frac{(\text{EBIT} - I)(1 - t) - D_p}{N}$$

Let the EBIT be 'x'.

$$\frac{(x - 4)(1 - 0.30)}{28} = \frac{(x - 18)(1 - 0.30)}{20}$$

$$\frac{0.70x - 2.8}{28} = \frac{0.70x - 12.6}{20}$$

$$14x - 56 = 19.6x - 352.8$$

$$-5.6x = -296.8$$

$$x = \text{EBIT} = 53 \text{ lakh}$$

(₹ in lakh)

Particulars	Plan A	Plan B
EBIT	53	53
(-) Interest		
- Existing	(4)	(4)
- New	-	(14)
EBT	49	35
(-) Tax @ 30%	(14.7)	(10.5)
PAT	34.3	24.5
No. of shares	28	20
EPS	1.225	1.225

Problem No. 8] The following data pertains to Yagya Ltd.:

Existing Capital Structure:

20 lakh equity shares of ₹10 each

Tax Rate 50%

Yugya Ltd. plans to raise additional capital of ₹ 200 lakh for financing an expansion project. It is evaluating two alternative financing plans:

- (i) Issue of 20,00,000 equity shares of ₹ 10 each and
- (ii) Issue of ₹ 200 lakh debentures carrying 14% interest.

You are required to compute indifference point.

[Dec. 2018 (4 Marks)]

Ans.

Capital structure:

Particulars	Alternative I	Alternative II
Existing equity share capital	2,00,00,000	2,00,00,000
New Finance:		
Equity Share Capital	2,00,00,000	-
14% Debentures	-	2,00,00,000
No. of equity shares	40,00,000	20,00,000

Calculation of indifferent point between Alternative I & Alternative II:

$$\frac{(EBIT - I)(1 - t) - D_p}{N_1} = \frac{(EBIT - I)(1 - t) - D_p}{N_2}$$

Let the EBIT be 'x'.

$$\frac{(x - 0)(1 - 0.5) - 0}{40,00,000} = \frac{(x - 28,00,000)(1 - 0.5) - 0}{20,00,000}$$

$$\frac{0.5x}{4} = \frac{0.5x - 14,00,000}{2}$$

$$x = 2x - 56,00,000$$

$$-x = -56,00,000$$

$$x = EBIT = 56,00,000$$

At EBIT of ₹ 56,00,000, EPS under both option will be same i.e. ₹ 0.7 per share.

Verification:

Particulars	Alternative I	Alternative II
EBIT	56,00,000	56,00,000
(-) Interest	-	(28,00,000)
EBT	56,00,000	28,00,000
(-) Tax @ 50%	(28,00,000)	(14,00,000)
PAT/Profit available to equity shareholders	28,00,000	14,00,000
No. of equity shares	40,00,000	20,00,000
EPS	0.7	0.7

Problem No. 9] X Ltd. is considering the following two alternative financing plans:

Particulars	Plan I	Plan II
Equity shares @ ₹10 each	4,00,000	4,00,000
12% Debentures	2,00,000	—
Preference shares @ ₹100 each	—	2,00,000
Total	6,00,000	6,00,000

The Earning Before Interest and Tax (EBIT) at indifference point between the plans is ₹2,40,000. Corporate tax rate is 30%. Calculate the rate of dividend on preference shares.
[June 2019 (4 Marks)]

Ans.

Calculation of indifferent point between Plan I & Plan II:

$$\frac{(EBIT - I)(1 - t) - D_p}{N_1} = \frac{(EBIT - I)(1 - t) - D_p}{N_2}$$

Let the dividend on preference shares be 'x'.

$$\frac{(2,40,000 - 2,00,000)(1 - 0.3) - 0}{40,000} = \frac{(2,40,000 - 0)(1 - 0.3) - x}{40,000}$$

$$\frac{1,51,200}{4} = \frac{1,68,000 - x}{4}$$

$$1,51,200 = 1,68,000 - x$$

$$-16,800 = -x$$

$$x = \text{Preference Dividend} = 16,800$$

$$\text{Rate of Preference Dividend} = \frac{16,800}{2,00,000} \times 100 = 8.4\%$$

Problem No. 10] The operating income of Fine Crockery Ltd. is ₹ 9 lakh before interest and taxes. The cost of debt is 10 per cent and the current borrowing is ₹ 30 lakh. The cost of capital is 12%.

Calculate the cost of equity for Fine Crockery Ltd. Ignore Taxation.

[Dec. 2020 (4 Marks)]

Ans.

Net operating income/EBIT	9,00,000
(-) Interest on debentures (30,00,000 × 10%)	(3,00,000)
Earnings available for equity holders	6,00,000

$$\text{Market value of firm} = \frac{EBIT}{K_c} = \frac{9,00,000}{12\%} = 75,00,000$$

$$\text{Market value of equity} = 75,00,000 - 30,00,000 = 45,00,000$$

$$K_e = \frac{\text{Earnings available for equity holders}}{\text{Market value of equity}} = \frac{6,00,000}{45,00,000} = 0.1333 \text{ i.e. } 13.33\%$$

Problem No. 11] Calculate the level of Earnings Before Interest and Tax (EBIT) at which the EPS indifference point between the following financing alternative will occur.

(a) Equity share capital of ₹ 12,00,000 and 12% debentures of ₹ 8,00,000.

Or

(b) Equity share capital of ₹ 8,00,000, 14% preference share capital of ₹ 4,00,000 and 12% debentures of ₹ 8,00,000.

Assume corporate tax is 35% and par value of equity share, preference shares and debentures are ₹100 in each case.

[Dec. 2021 (4 Marks)]

Ans.

Calculation of indifferent point between Option 1 & 2:

$$\frac{(\text{EBIT} - I)(1 - t) - D_p}{N_1} = \frac{(\text{EBIT} - I)(1 - t) - D_p}{N_2}$$

Let the EBIT be 'x'.

$$\frac{(x - 96,000)(1 - 0.35)}{12,000} = \frac{(x - 96,000)(1 - 0.35) - 56,000}{8,000}$$

$$\frac{0.65x - 62,400}{12} = \frac{0.65x - 62,400 - 56,000}{8}$$

$$5.2x - 4,99,200 = 7.8x - 14,20,800$$

$$-2.6x = -9,21,600$$

$$x = \text{EBIT} = 3,54,462$$

Problem No. 12] A Company is considering two financial alternatives to Finance its expansion plan to ₹1.00 Crore.

First alternative : Issue of equity shares @ ₹12.50.

Second alternative : Issue 14% debentures.

Tax to be considered at 40%.

Its present capital structure consists of equity shares of ₹ 20,00,000 (face value ₹ 10) and 8% debentures of ₹ 50,00,000.

Expected price earnings ratio in case of:

First alternative is - 14

Second alternative is - 12.

You are required to calculate the indifference point at which market price of share under both alternatives will be same.

[Dec. 2021 (4 Marks)]

Ans.

Capital structure:

Particulars	Alternative I	Alternative II
Existing:		
Equity Share Capital	20,00,000	20,00,000
8% Debentures	50,00,000	50,00,000

Particulars	Alternative I	Alternative II
New:		
Equity Share Capital	80,00,000	-
Securities Premium	20,00,000	-
14% Debentures	-	1,00,00,000

Calculation of indifferent point between Alternatives I & II:

Value of share = EPS × P/E Ratio

$$\frac{(EBIT - I)(1 - t) - D_p}{N} \times 14 = \frac{(EBIT - I)(1 - t) - D_p}{N} \times 12$$

Let the EBIT be 'x'.

$$\frac{(x - 4,00,000)(1 - 0.40)}{10,00,000} \times 14 = \frac{(x - 18,00,000)(1 - 0.40)}{2,00,000} \times 12$$

$$\frac{0.6x - 2,40,000}{10} \times 14 = \frac{0.6x - 10,80,000}{2} \times 12$$

$$\frac{8.4x - 33,60,000}{10} = \frac{7.2x - 1,29,60,000}{2}$$

$$16.8x - 67,20,000 = 72x - 12,96,00,000$$

$$-55.2x = -12,28,80,000$$

$$x = \text{EBIT} = 22,26,087$$

Thus, EBIT at ₹ 22,26,087, the market price of both the companies will be same

Verification:

Particulars	Alternative I	Alternative II
EBIT	22,26,087	22,26,087
(-) Interest	(4,00,000)	(18,00,000)
EBT	18,26,087	4,26,087
(-) Tax @ 40%	(7,30,435)	(1,70,435)
PAT/Profit available to equity shareholders	10,95,652	2,55,652
No. of equity shares	10,00,000	2,00,000
EPS	1.09565	1.27826
P/E Ratio	14	12
Market Price	15.34	15.34

UNIT-II: LEVERAGES

Q. 16. "To keep the risk within manageable limits, a firm which has high degree of operating leverage should have low financial leverage and vice-versa." Comment [June 2005 (5 Marks)]

Or

Higher financial leverage is better than higher operating leverage. Comment. [June 2014 (5 Marks)]

Ans.

Operating leverage is the ratio of net operating income before fixed charges to net operating income after fixed charges. Operating leverage indicates the tendency of operating profits (EBIT) to vary disproportionately with sales. It is related to fixed cost. If the fixed costs are high, the operating leverage will also be high. A high operating leverage indicates high risky situation as it consists of large fixed costs.

Financial leverage is the ratio of the percentage increase in earnings per share (EPS) to the percentage increase in earnings before interest and taxes (EBIT). It indicates the tendency of EBT to vary disproportionately with operating profit (i.e. EBIT). High financial leverage indicates high burden of interest.

Risky Situation: High operating leverage combined with high financial leverage will constitute risky situation.

Normal Situation: One should be high and another should be low i.e. if company has a low operating leverage, financial leverage can be higher and vice versa.

Ideal Situation: Both should be low.

Q. 17. Differentiate between: Business Risk & Financial Risk.

[Dec. 2007 (5 Marks)], [Dec. 2009 (5 Marks)]
[Dec. 2011 (5 Marks)], [Dec. 2020 (4 Marks)]

Ans.

Business risk refers to the risk associated with the firm's operations. It is represented by the variability of earnings before interest and tax (EBIT). Operating leverage concept can be used to evaluate business risk.

Financial risk refers to the additional risk placed on firm's shareholders as a result of debt use in financing. Companies that issue more debt would have higher financial risk than companies financed mostly by equity as interest burden will be high in case more debt financing. Financial risk can be measured by ratios such as firm's Financial Leverage, Total Debt to Assets Ratio etc.

Q. 18. "Financial leverage is a fair weather friend." Discuss.

[June 2008 (5 Marks)]

Ans. Degree of financial leverage is the ratio of the percentage increase in earnings per share (EPS) to the percentage increase in earnings before interest and taxes (EBIT).

Financial leverage indicates the tendency of profit before tax (PBT) to vary disproportionately with operating profit (i.e. EBIT)

Formula:

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} \text{ OR } \text{Financial Leverage} = \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$$

Leverage is fair weather friend: It boosts return on equity when earnings are robust, but it depresses return on equity when earnings are poor. Thus, leverage makes the good time better, but the bad time worse. Therefore, it should be used in moderation and in businesses with stable earnings. It should be used sparingly and cautiously in business with volatile earnings.

Q. 19. Total risk is the risk associated with combined leverage. Comment.
 [Dec. 2008 (5 Marks)], [Dec. 2010 (5 Marks)]

Ans.

Degree of combined leverage (DCL) is the ratio of percentage change in earning per share to the percentage change in sales. It indicates the effect the sales changes will have on EPS.

Formula:

Combined Leverage = Operating Leverage × Financial Leverage

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{EBT}}$$

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}}$$

$$\text{Combined Leverage} = \frac{\% \text{ change in EPS}}{\% \text{ change in Sales}}$$

It indicates the effect the sales changes will have on EPS.

Combined leverage combines the effect of 'operating leverage' and 'financial leverage'. If both are high it means company has high burden of 'fixed cost' as well as 'interest cost' which is risky situation. One should be high and another should be low i.e. if company has a low operating leverage, financial leverage can be higher and *vice versa*.

Q. 20. Distinguish between: Operating Leverage & Financial Leverage
 [Dec. 2014 (5 Marks)], [Dec. 2016 (4 Marks)]

Ans. Following are the main differences between operating leverage & financial leverage.

Points	Operating Leverage	Financial Leverage
Meaning	Operating leverage is the ratio of net operating income before fixed charges to net operating income after fixed charges.	Financial leverage is the ratio of the percentage increase in earnings per share (EPS) to the percentage increase in earnings before interest and taxes (EBIT).
Disproportionate to	It indicates the tendency of operating profits (i.e. EBIT) to vary disproportionately with sales.	It indicates the tendency of EBIT to vary disproportionately with operating profit (i.e. EBIT).
Related to	It is related to fixed cost.	It is related to interest on debt.
Indicates	High operating leverage indicates high fixed cost.	High financial leverage indicates high burden of interest.
When it makes favourable	If contribution exceeds fixed cost, operating leverage will be favourable and <i>vice versa</i> .	If ROI exceeds the rate of interest on debt, financial leverage will be favourable and <i>vice versa</i> .
Business/ financial risk	It indicates business risk.	Indicates financial risk.

Q. 21. EBIT-EPS analysis is an effective method in analyzing the effect of leverage.
Comment. [Dec. 2014 (5 Marks)]

Ans. One widely used means of examining the effect of leverage is to analyze the relationship between earnings before interest and taxes (EBIT) and earnings per share (EPS). The use of EBIT-EPS analysis indicates to management the projected EPS for different financial plans. Generally, management wants to maximize EPS if doing so also satisfies the primary goal of financial management - maximization of the owner's wealth as represented by the value of business, i.e. the value of firm's equity.

If the firm attempts to use excessive amounts of debt, shareholders (who are risk averters) may sell their shares, and thus its price will fall. While the use of large amount of debt may result in higher EPS, it may also result in a reduction in the price of the firm's equity. The optimum financial structure for a firm should be the one which maximizes the price of the equity. Given the importance of earnings per share (EPS) as a measure of a firm performance, analysis of the impact of financing alternatives on EPS is an important first step. Essentially, the method involves the comparison of alternative methods of financing under various assumptions as to EBIT.

The use of EBIT-EPS analysis provides information to the management regarding the projected EPS for different financial plan. Thus it is effective method in analyzing the effect of leverage.

Q. 22. The study and measurement of financial leverage is irrelevant.
[Dec. 2017 (5 Marks)]

Ans.

Degree of financial leverage is the ratio of the percentage change in earning per share (EPS) to the percentage change in earnings before interest and taxes (EBIT). Financial leverage indicates the tendency of profit before tax (PBT) to vary disproportionately with operating profit (i.e. EBIT)

Formula:

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} \text{ OR } \frac{\% \text{ change in EPS}}{\% \text{ change in EBIT}}$$

Use of Financial Leverage:

- ◆ Financial leverage helps to examine the relationship between EBIT and EPS.
- ◆ Financial leverage measures the percentage of change in taxable income to the percentage change in EBIT.
- ◆ Financial leverage locates the correct profitable financial decision regarding capital structure of the company.
- ◆ Financial leverage is one of the important device which is used to measure the fixed cost proportion with the total capital of the company. If the firm acquires fixed cost funds at a higher cost, then the earnings from those assets, the earning per share and return on equity capital will decrease.

Thus, it is incorrect to say that measurement of financial leverage is irrelevant.

PROBLEMS & SOLUTIONS

Problem No. 13] The income statement of Magnus Ltd. is given below:

	(₹ in lakh)
Net sales	2,070
Cost of goods sold	1,100
Selling expenses	550
Administrative expenses	65
Interest	75
Taxes	84
Net profit	196

25% of the cost of goods sold and 20% of the selling expenses are fixed costs. Administrative expenses are entirely fixed in nature. The paid-up equity share capital of the company consists of 10 lakh equity shares of ₹ 10 each. It is expected that there will be no change in its capital structure in the near future.

- (i) Calculate different type of leverages for the company.
- (ii) If the company plans to increase its EPS by 25%, then by what percentage should it increase its net sales? It is assumed that the unit selling price, unit variable cost, fixed costs and interest will remain constant in the forthcoming year.
- (iii) If the company cannot increase its sales revenues due to competition then what should the company do to increase its EPS by 25%? Show relevant calculations.

It is assumed that the unit selling price and the interest will remain constant in the forthcoming year. [Dec. 2014 (16 Marks)]

Ans.

Particulars		(₹ in lakh)
Sales	100%	2,070
Variable cost	(61.1111%)	(1,265)
Contribution	38.8889%	805
(-) Fixed cost		(450)
Earnings before interest & tax		355
(-) Interest		(75)
Earnings before tax		280
(-) Tax @ 30%		(84)
Profit after tax		196

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{805}{355} = 2.2676$$

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{355}{280} = 1.2679$$

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} = \frac{805}{280} = 2.875$$

$$\text{EPS} = \frac{\text{Profit for equity shareholders}}{\text{No. of shares}} = \frac{196 \text{ lakh}}{1 \text{ lakh}} = 196$$

$$\text{EPS after 25\% increase} = 196 + 49 = 245.$$

Combined leverage is 2.875. This means if there is 1% change in sales, EPS will change by 2.875%.

If the company plans to increase its EPS by 25% then percentage increase its net sales is calculated as follows:

For 2.875% change in EPS - 1% change in sales required

For 25% change in EPS - ?

$$\frac{25}{2.875} = 8.69566\%$$

Particulars		(₹ in lakh)
Sales (after 8.69566% increase)	100%	2,250
Variable cost	(61.1111%)	(1,375)
Contribution	38.8889%	875
(-) Fixed cost		(450)
Earnings before interest & tax		425
(-) Interest		(75)
Earnings before tax		350
(-) Tax @ 30%		(105)
Profit after tax		245

$$\text{EPS} = \frac{\text{Profit available for equity shareholder}}{\text{No. of shares}} = \frac{245 \text{ lakh}}{1 \text{ lakh}} = 245$$

If the company cannot increase its sales revenues due to competition then company has to reduce its variable cost to increase its EPS by 25%.

Particulars	(₹ in lakh)
Sales	2,070
Variable cost [Bal. Fig.]	(1,195)
Contribution	875
(-) Fixed cost	(450)
Earnings before interest & tax	425
(-) Interest	(75)
Earnings before tax	350
(-) Tax @ 30%	(105)
Profit after tax	245

$$\text{Reduction in variable cost required} = 1,265 - 1,195 = 70 \text{ lakh.}$$

Problem No. 14] From the following given operating data, calculate the degree of operating leverage of the two companies:

	ABC Ltd.	XYZ Ltd.
Sales (₹)	40 lakh	50 lakh
Variable expense (as % of sales)	40%	30%
Fixed cost (₹)	10 lakh	20 lakh

Also, state which company has the greater business risk and why?

[Dec. 2015 (4 Marks)]

Ans.

Particulars	ABC Ltd.	XYZ Ltd.
Sales	40,00,000	50,00,000
Variable cost	(16,00,000)	(15,00,000)
Contribution	24,00,000	35,00,000
(-) Fixed cost	(10,00,000)	(20,00,000)
Earnings before interest & tax (EBIT)	14,00,000	15,00,000

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

$$\text{ABC Ltd.} = \frac{24,00,000}{14,00,000} = 1.7143$$

$$\text{XYZ Ltd.} = \frac{35,00,000}{15,00,000} = 2.3333$$

XYZ Ltd. has high operating leverage as compared to ABC Ltd. In XYZ Ltd. the EBIT is likely to vary more with fluctuation in sales and hence it has higher degree of operating risk.

Problem No. 15] Bling Ltd. has supplied the following data:

Operating leverage 2.5; financial leverage 3; EPS ₹ 30; market price per share ₹ 225; and capital 20,000 shares. It is proposed to raise a loan of ₹ 50,00,000 @ 18% for expansion. After expansion, sales will increase by 25% and fixed cost by ₹ 3,00,000.

You are required to work out the market price per share (MPS) after expansion, assuming tax rate @ 50%. [Dec. 2015 (6 Marks)], [Dec. 2021 (4 Marks)]

Ans.

Particulars	(₹ in lakh)
Contribution	90,00,000
(-) Fixed cost	(54,00,000)
Earnings before interest & tax (EBIT)	36,00,000
(-) Interest	(24,00,000)
Earnings before tax (EBT)	12,00,000
(-) Tax @ 50%	(6,00,000)
Profit after tax (PAT)	6,00,000

$$EPS = \frac{\text{Profit available for equity shareholders}}{\text{No. of shares}}$$

$$30 = \frac{x}{20,000}$$

$x =$ Profit available for equity shareholders = 6,00,000

Tax rate is 50% hence profit before tax will be ₹ 12,00,000.

Calculation of EBIT:

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}}$$

Let the EBIT be 'x'

$$3 = \frac{x}{12,00,000}$$

$$\text{EBIT} = x = 36,00,000$$

Calculation of Contribution:

Let the Contribution be 'x'

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

$$2.5 = \frac{x}{36,00,000}$$

$$\text{Contribution} = x = 90,00,000$$

Market price per share after expansion:

Particulars	(₹ in lakh)
Contribution	1,12,50,000
(-) Fixed cost	(57,00,000)
Earnings before interest & tax (EBIT)	55,50,000
(-) Interest	(33,00,000)
Earnings before tax (EBT)	22,50,000
(-) Tax @ 50%	(11,25,000)
Profit after tax (PAT)	11,25,000

$$EPS = \frac{\text{Profit for equity shareholders}}{\text{No. of shares}} = \frac{11,25,000}{20,000} = 56.25$$

Problem No. 16] ABC Ltd. has an average selling price of ₹ 10 per unit. Its variable unit costs are ₹ 7 and fixed costs amount to ₹ 1,70,000. It finances all its assets by equity funds. It pays 30% tax on its income. PQR Ltd. is identical to ABC Ltd. except in respect of the pattern of financing. The latter finances its assets 50% by equity and 50% by debt, the interest on which amounts to ₹ 20,000.

Determine the degree of operating, financial and combined leverages at ₹ 7,00,000 sales for both the companies and interpret the results. [Dec. 2016 (4 Marks)]

Ans.

No. of units = $7,00,000/10 = 70,000$ units.

Particulars	ABC Ltd.	PQR Ltd.
Sales	7,00,000	7,00,000
(-) Variable cost	(4,90,000)	(4,90,000)
Contribution	2,10,000	2,10,000
(-) Fixed costs	(1,70,000)	(1,70,000)
EBIT	40,000	40,000
(-) Interest	-	(20,000)
EBT	40,000	20,000
(-) Tax @ 30%	(12,000)	(6,000)
PAT	28,000	14,000
Operating leverage	5.25	5.25
Financial leverage	1.00	2.00
Combined leverage	5.25	10.5

Analysis:

- (1) High operating leverage shows higher burden of fixed cost consequently higher business risk. As both companies has similar operating leverage hence both has same business risk.
- (2) High financial leverage shows higher burden of interest cost consequently higher financial risk. As PQR Ltd. has higher financial leverage hence it has high financial risk as compared to ABC Ltd.
- (3) High combined leverage shows combined effect of higher burden of fixed and interest cost consequently higher business & financial risk. As PQR Ltd. has higher combined leverage hence it has high business risk & financial risk as compared to ABC Ltd.

Problem No. 17] Consider a firm X Ltd., having the following details:

EBIT = ₹ 1,00,000

Debt borrowed at the rate of 10% = ₹ 5,00,000

Overall Capitalization rate (K_c) = 12.5%

Find the value of the firm when:

(1) Debt is increased by ₹ 2,00,000

(2) Debt is decreased by ₹ 2,00,000

Also calculate cost of equity in each case.

[June 2017 (2 Marks)]

Ans.

Particulars	Debt is increased by ₹ 2,00,000	Debt is decreased by ₹ 2,00,000
EBIT	1,00,000	1,00,000
(-) Interest	(70,000)	(30,000)
EBT	30,000	70,000
Overall Capitalization rate (K_c)	12.5%	12.5%

Particulars	Debt is increased by ₹ 2,00,000	Debt is decreased by ₹ 2,00,000
Value of firm (EBIT/ K_e)	8,00,000	8,00,000
(-) Value of debt	(7,00,000)	(3,00,000)
Value of equity	1,00,000	5,00,000
Cost of equity $K_e = \text{EBT}/\text{Value of equity} \times 100$	30%	14%

Problem No. 18] The net sales of ABC Ltd. is ₹ 30 Crore. Earnings before interest and tax of the company as a percentage of net sales is 15%.

The capital employed comprise of:

Equity	₹ 12 Crore
13% cumulative pref. shares	₹ 5 Crore
Debentures @ 15%	₹ 6 Crore

Calculate operating leverage of the company given that combined leverage is 3.

[Dec. 2017 (4 Marks)]

Ans.

Particulars	₹
Sales	30,00,00,000
Variable cost	(19,20,00,000)
Contribution	10,80,00,000
(-) Fixed cost	(6,30,00,000)
EBIT [15% of sales]	4,50,00,000
(-) Interest [6,00,00,000 × 15%]	(90,00,000)
Earnings before tax (EBT)	3,60,00,000

Let the contribution be 'x'.

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}}$$

$$3 = \frac{x}{3,60,00,000}$$

$$x = \text{Contribution} = 10,80,00,000$$

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

$$= \frac{10,80,00,000}{4,50,00,000}$$

$$= 2.4$$

Problem No. 19] A firm has sales of ₹ 10 lakh and fixed cost of ₹ 1.5 lakh. Contribution margin is 30%. It has 10% debt of ₹ 8 lakh. Find out Operating leverage, Financial leverage and Combined leverage. Also find out that if the firm wants to double the EBIT, how much per cent increase in sales is needed?

[Dec. 2017 (4 Marks)]

Ans.

Particulars	₹
Sales	10,00,000
(-) Variable Cost	(7,00,000)
Contribution (30% of sales)	3,00,000
(-) Fixed Cost	(1,50,000)
EBIT	1,50,000
(-) Interest (8,00,000 × 10%)	(80,000)
EBT	70,000

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{3,00,000}{1,50,000} = 2$$

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{1,50,000}{70,000} = 2.14$$

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} = \frac{3,00,000}{70,000} = 4.28$$

If operating leverage is 2, this means that 1% change in sales will cause 2% change in EBIT.

Problem No. 20] M/s Abacus Ltd. has decided to fill up the position of finance officer. To test the analytical capacity of applicant, following information is provided in the scanning test. You are one of the applicants for the position of finance officer. You are required to prepare the Income Statement in the vertical format based on information given hereunder.

1. The operating leverage is 2.50.
2. The financial leverage is 3.00.
3. The earnings per share is ₹ 30.
4. Present market price per share is ₹ 225.
5. Applicable tax rate is 33.0357%.
6. Number of equity shares outstanding as of date are 20,000.

[June 2018 (4 Marks)]

Ans.

Income Statement:

Particulars	₹
Contribution	67,20,000
(-) Fixed cost	(40,32,000)
Earnings before interest & tax (EBIT)	26,88,000
(-) Interest	(17,92,000)
Profit before tax (EBT)	8,96,000
(-) Tax @ 33.0357%	(2,96,000)
Profit after tax (PAT)	6,00,000

$$\text{EPS} = \frac{\text{Profit after tax}}{\text{No. of shares}}$$

$$30 = \frac{\text{Profit after tax}}{20,000}$$

$$\text{Profit after tax} = 20,000 \times 30 = 6,00,000$$

$$\text{Profit before tax} = \frac{6,00,000}{100\% - 33.0357\%} = \frac{6,00,000}{66.9643\%} = 8,96,000$$

$$\text{Financial leverage} = \frac{\text{EBIT}}{\text{EBT}}$$

$$3 = \frac{\text{EBIT}}{8,96,000}$$

$$\text{EBIT} = 8,96,000 \times 3 = 26,88,000$$

$$\text{Operating leverage} = \frac{\text{Contribution}}{\text{EBIT}}$$

$$2.5 = \frac{\text{Contribution}}{26,88,000}$$

$$\text{Contribution} = 26,88,000 \times 2.5 = 67,20,000$$

Problem No. 21] The Balance Sheet of MP Ltd. as on 31st March, 2018 is given as under:

LIABILITIES		ASSETS	
Equity Capital (₹ 10 per share)	1,60,000	Net Fixed Assets	3,00,000
Reserves	80,000	Current Assets	1,00,000
10% Debt	1,20,000		
Current Liabilities	40,000		
	<u>4,00,000</u>		<u>4,00,000</u>

Tax rate is 50%

You are required to:

(i) Likely level of EBIT if the EPS is (a) ₹ 1, (b) EPS is ₹ 3.

(ii) Financial break-even level.

[Dec. 2018 (4 Marks)]

Ans.

Statement showing the likely level of EBIT if EPS is 1 & 3:

Earnings before interest & tax (EBIT)	44,000	1,08,000
(-) Interest	(12,000)	(12,000)
Earnings before tax (EBT)	32,000	96,000
(-) Tax @ 50%	(16,000)	(48,000)
Profit after tax (PAT)	16,000	48,000
No. of shares	16,000	16,000
EPS	1	3

Perform reverse working downward to upward.

Financial break-even level is the level of earnings before interest and taxes that will result in zero net income or zero earnings per share.

Earnings before interest & tax (EBIT)	12,000
(-) Interest	(12,000)
Earnings before tax (EBT)	12,000
(-) Tax @ 50%	0
Profit after tax (PAT)	0
No. of shares	16,000
EPS	0

Problem No. 22] ABC Ltd. had the following Balance Sheet as on 31st March, 2018:

LIABILITIES	₹ in Crore	ASSETS	₹ in Crore
Equity share capital (100 lakh shares @ ₹ 10 each)	10	Fixed Assets (Net)	25
Reserves & Surplus	2	Current Assets	15
15% Debentures	20		
Current Liabilities	8		
	<u>40</u>		<u>40</u>

The additional information are as under:

Fixed cost per annum (excluding interest)	₹ 8 Crore
Variable Operating Cost Ratio	65%
Total Assets Turnover Ratio	2.5
Income Tax Rate	30%

You are required to calculate the following:

- Earnings per Share
- Operating Leverage
- Financial Leverage
- Combined Leverage

[Dec. 2018 (4 Marks)]

Ans.

$$\text{Assets Turnover Ratio} = \frac{\text{Sales}}{\text{Total Assets}}$$

$$2.5 = \frac{\text{Sales}}{40}$$

$$\text{Sales} = ₹ 100 \text{ Crore}$$

Particulars	₹ in Crore
Sales	100
Variable cost	(65)
Contribution	35
(-) Fixed cost	(8)

Earnings before interest & tax (EBIT)	27
(-) Interest	(3)
Earnings before tax (EBT)	24
(-) Tax @ 40%	(9.6)
Profit after tax (PAT)	14.4

$$\text{EPS} = \frac{\text{Profit available to equity shareholders}}{\text{No. of equity shares}} = \frac{14.4}{1} = 14.4 \text{ per share}$$

$$\text{Operating Leverage} = \frac{\text{Contribution}}{\text{EBIT}} = \frac{35}{27} = 1.296$$

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{27}{24} = 1.125$$

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} = \frac{35}{24} = 1.458$$

Problem No. 23] The following data relates to Ribbon Ltd.:

Earnings Before Interest & Taxes (EBIT)	30,00,000
Profit After Tax	13,50,000
Operating Fixed Costs	22,50,000
Tax Rate	40%

Required:

- (i) Prepare the Income Statement of Ribbon Ltd.
- (ii) If the company wants to increase its profit after tax by 40%, how much should be the percentage rise in EBIT that is required? [June 2019 (4 Marks)]

Ans.

Particulars	₹
Contribution	52,50,000
(-) Fixed cost	(22,50,000)
Earnings before interest & tax (EBIT)	30,00,000
(-) Interest [Bal. Fig.]	(7,50,000)
Earnings before tax (EBT)	22,50,000
(-) Tax @ 40%	(9,00,000)
Profit after tax (PAT)	13,50,000

$$\text{Financial Leverage} = \frac{\text{EBIT}}{\text{EBT}} = \frac{30,00,000}{22,50,000} = 1.33$$

For 1.33% increase in PAT, EBIT should increase by 1%

For 40% increase in PAT, EBIT should increase by $40/1.33 = 30\%$ (Approx.)

Problem No. 24] You are given two financial plans of a company which has two financial situations. The detailed information is as under:

Installed capacity	10,000 units
Actual production and sales	60% of installed capacity
Selling price per unit	₹ 30
Variable cost per unit	₹ 20
Fixed Cost: Situation A = ₹ 20,000; Situation B = ₹ 25,000.	

Capital structure of the company is as follows:

Particulars	Financial Plans	
	PQ (₹)	MN (₹)
Equity	12,000	35,000
Debt (Cost of debt 12%)	40,000	10,000
	<u>52,000</u>	<u>45,000</u>

You are required to calculate operating leverage and financial leverage of both the plans.
[Dec. 2020 (4 Marks)], [June 2021 (4 Marks)]

Ans.

Actual production and sales = $10,000 \times 60\% = 6,000$ units

Sales - Variable Cost = Contribution; $30 - 20 = 10$

Particulars	Situation 1		Situation 2	
	Plan PQ	Plan MN	Plan PQ	Plan MN
Contribution	60,000	60,000	60,000	60,000
(-) Fixed cost	(20,000)	(20,000)	(25,000)	(25,000)
EBIT	40,000	40,000	35,000	35,000
(-) Interest	(4,800)	(1,200)	(4,800)	(1,200)
EBT	35,200	38,800	30,200	33,800
Operating Leverage	1.5		1.71	
Financial Leverage	1.14	1.03	1.16	1.04
Combined Leverage	1.71	1.55	1.98	1.78

Problem No. 25] Consider the following information of Sunshine Ltd.:

	₹ in lakh
Earnings before interest and taxes	2,000
Earnings before taxes	600
Fixed Cost	1,400

Calculate the percentage of change in Earnings per share, if sales increase by 2%, disregarding other factors.
[Dec. 2020 (4 Marks)]

Ans.
Income Statement

Particulars	₹ In lakh
Contribution	3,400
(-) Fixed cost	(1,400)
EBIT	2,000
(-) Interest	(1,400)
EBT	600

$$\text{Combined Leverage} = \frac{\text{Contribution}}{\text{EBT}} = \frac{3,400}{600} = 5.67$$

The combined leverage of 5.67 implies that for 1% change in sales would bring 5.67% changes in EPS.

Therefore, with a 2% change in sales, change in EPS would be $5.67 \times 2 = 11.34\%$.

Problem No. 26] Compute the degree of financial leverage for each of the companies Tattoos Ltd. and Gherkins Ltd. based on the following information:

	Tattoos Ltd.	Gherkins Ltd.
Earnings Before Interest and Tax	₹ 50,000	₹ 1,25,000
Debentures @ 8%	₹ 2,50,000	₹ 3,00,000
Preference share capital @ 10%	₹ 1,00,000	₹ 1,50,000
Tax Rate	35%	35%

[Dec. 2020 (4 Marks)]

Ans.
Income Statement

Particulars	Tattoos Ltd.	Gherkins Ltd.
EBIT	50,000	1,25,000
(-) Interest	(20,000)	(24,000)
EBT	30,000	1,01,000
(-) Tax @ 35%	(10,500)	(35,350)
PAT	19,500	65,650
(-) Preference Dividend	(10,000)	(15,000)
Profit available for equity shareholders	9,500	50,650

$$\begin{aligned}
 & \text{Tattoos Ltd.} \\
 \text{DFL} &= \frac{\text{EBIT}}{\text{EBT} - \left[\frac{D_p}{(1-t)} \right]} \\
 &= \frac{50,000}{30,000 - \left[\frac{10,000}{(1-0.35)} \right]} \\
 &= \frac{50,000}{14,615} \\
 &= 3.421
 \end{aligned}$$

$$\begin{aligned}
 & \text{Gherkins Ltd.} \\
 \text{DFL} &= \frac{\text{EBIT}}{\text{EBT} - \left[\frac{D_p}{(1-t)} \right]} \\
 &= \frac{1,25,000}{1,01,000 - \left[\frac{15,000}{(1-0.35)} \right]} \\
 &= \frac{1,25,000}{77,923} \\
 &= 1.604
 \end{aligned}$$

DIVIDEND DECISIONS

THEORETICAL QUESTIONS

Q. 1. Write a short note on: Factors affecting dividend policy of the firm.

[Dec. 2009 (5 Marks)]

Or

Briefly discuss the determinants of dividend policy.

[June 2016 (4 Marks)]

Or

What are the main determinants of dividend policy in a corporate enterprise?

[June 2019 (4 Marks)], [Dec. 2020 (4 Marks)]

Ans.

In the company, dividend policy is determined by the Board of directors having taken into consideration a number of factors which include legal restrictions imposed by the Government to safeguard the interests of various parties or the constituents of the company.

The main considerations are as follows:

- (1) **Legal:** As regards cash dividend policy several legal constraints bear upon it – a firm may not pay a dividend which will impair capital. Dividend must be paid out of firm's earnings. Contract for bonds or loans may restrict dividend payments. The purpose of legal restriction is to ensure that the payment of dividend may not cause insolvency.
- (2) **Financial:** There are financial constraints to Dividend Policy. A firm can pay dividend only to the extent that it has cash to disburse. A firm can't pay dividend when it does not have adequate liquidity.
- (3) **Economic constraints:** Besides, there are economic constraints also. The question arise, does the value of dividend affects the value of the firm. If the answer to it is yes then there must be some optimum level of dividend, which maximizes the market price of the firm's stock.
- (4) **Nature of business:** A company having regular earnings may like to have a stable and consistent dividend policy.
- (5) **Existence of the company:** The length of existence of the company affects dividend policy. With their long standing experience, the company may have a better dividend policy than the new companies.

- (6) **Type of Company:** The type of company whether a private limited company or a public limited company affects dividend decisions. In a closely held company, a view may be taken for acquiescence and conservative policy may be followed but for a public limited company with wide spread of shareholder, a more progressive and promising dividend policy will be the better decision.
- (7) **Financial needs:** Needs of the Company for additional capital affects the dividend policy. The extent to which the profits are required to be invested in the company for business growth is the main consideration in dividend decisions. Working capital position of a company is an important condition that affects the dividend policy as no company would declare a dividend to undermine its financial strength and threaten its solvency.
- (8) **Market conditions:** Business cycles, boom and depression, affects dividend decisions. In a depressed market, higher dividend creates better image of the company. During the boom the company may like to save more, create reserves for growth and expansion or meeting its working capital requirements.
- (9) **Financial arrangement:** In case of financial arrangements being entered into or being planned like merger or amalgamation with another company, liberal policy of dividend distribution is followed to make the share stock more attractive.
- (10) **Change in Government policies:** Changes in Government Policies particularly those affecting earnings of the company are also taken into consideration in settling dividend decisions. For example, higher rate of taxation will definitely affect company earnings and carry impact on dividend decisions. Besides, fiscal, industrial, labour, industrial policies do affect in different magnitude the dividend decisions of individual corporate enterprises.

Q. 2. A large shareholder is not interested in dividend. Comment.

[June 2007 (5 Marks)]

Ans. A large or wealthy shareholder is high income tax bracket and thus interested in capital appreciation rather than current dividend. On the other hand, small shareholder like a retired person would like to get dividend which can be his one of the source of income. If in a company body of shareholders are small and homogenous management knows the expectation of shareholders, they prefer current income in form of dividend than capital appreciation. On the other hand large shareholders invest in companies to get capital appreciation than dividend as dividend may lead to higher tax liability as compared to long term capital gain.

Q. 3. "In an uncertain world in which verbal statements can be ignored or misinterpreted, dividend action does provide a clear-cut means of 'making a statement' that speaks louder than thousand words." Explain.

[June 2007 (5 Marks)]

Ans. With the higher profitability of certain companies, the shareholders have the grievances for not being paid higher dividend. Therefore, certain companies have now started paying higher dividend. This has in many cases raised the market, price of the share and provided opportunity to investors to encash their gains.

Lower dividend keeps the market price general low unless special circumstances exist due to company's efforts for growth by way of expansion or modernization or diversification to boost investors' sentiments.

Hence, it is correct to say that dividend action does provide a clear-cut means of 'making a statement' that speaks louder than thousand words.

Q. 4. The optimum dividend policy should strike a balance between current dividends and future growth. Comment. [June 2007 (5 Marks)]

Or

Dividend and growth are conflicting goals to each other. Comment. [June 2016 (5 Marks)]

Ans. When deciding how much cash to distribute to stockholders, financial managers must keep in mind that the firm's objective is to maximize shareholder value. Thus, the target payout ratio should be based on investor preferences for cash dividends or capital gains. If the firm increases the payout ratio, dividend will increase, resulting in a higher stock price other things being equal.

However, if the firm increases dividend, there will be less money available for reinvestment causing growth rate to decline. If growth rate falls, this will lower the stock price.

Therefore, when setting the optimal dividend policy the financial manager should strike a balance between current dividends and future growth so as to maximize the firm's stock price.

Q. 5. A stable dividend policy is always preferable to fluctuating dividend policy. Comment. [Dec. 2007 (5 Marks)], [June 2011 (5 Marks)]

[Dec. 2013 (5 Marks)], [June 2021 (5 Marks)]

Or

Dividend policy has to be adapted in the light of nature and environment of firm, industry and the economy. [Dec. 2012 (5 Marks)]

Ans. A stable Dividend policy may lead to higher stock prices because it sustains investors confidence as they value more the dividend which are certain to be received. If dividends fluctuate investors may discount with some percentage probability factor i.e. the likelihood of receiving any particular amount of dividend. Failure to pay dividends in one year may affect the market price of share and remove the security from the approved list of the investments used by institutional investors.

The dividend policy has to be adapted to the nature and environments of the firm, industry and economy. If the company is operating in highly cyclical industry, like the machine tools industry, its management cannot create through regular dividends as stability does not exist. A low pay out in boom period cannot be offset by continuing dividends in prolonged period of large losses. It is better to relate dividends to earnings and not unduly attempt to protect shareholders from large fluctuations in earnings so inherent in business.

Q. 6. Dividend policy is strictly a financing decision and payment of cash dividend is a passive residual. Comment. [Dec. 2010 (5 Marks)]

Or

Write a short note on: Residual theory of dividend policy. [Dec. 2012 (5 Marks)]

Ans.

According to Ezra Solomon, dividend policy is strictly a financing decision. The payment of cash dividend is a passive residual. The amount of dividend payout will fluctuate from period to period in keeping with fluctuations in the amount of acceptable investment opportunities available to the firm.

If the opportunities abound, percentage of payout is likely to be zero; on the other hand, if the firm is unable to find out profitable investment opportunities, payout will be 100%.

The theory implies that investors prefer to have the firm retain and reinvest earnings rather than pay them out in dividends if the return on re-invested earnings exceeds the rate of return the investors could themselves obtain on other investments of comparable risks.

Q. 7. Write a short note on: Modigliani-Miller hypothesis of dividend irrelevance.
[Dec. 2014 (5 Marks)]

Or

Dividend policy is irrelevant in decision making. Comment.

[June 2015 (5 Marks)]

Ans.

Professor Modigliani and Miller in their article, "Dividend Policy, Growth and the Valuation of Shares" advanced most comprehensive arguments to hold that investors are indifferent to dividends and capital gains and so dividends have no effect on the wealth of shareholders.

They argue that the value of the firm is determined by the earning power of firm's assets or its investment policy. The manner in which earnings are divided into dividends and retained earnings does not affect this value.

Assumptions: MM theory is based on certain assumptions, which are as follows:

- ◆ Existence of perfect market with rational investors.
- ◆ No floatation cost on issue of shares.
- ◆ No taxes.
- ◆ Fixed investment policy.
- ◆ There is no risk of uncertainty (this is dropped by MM later).
- ◆ No external funds. All investments are funded by equity or retained earnings.

With these assumptions, the market price of a share at the beginning of the period is defined as equal to the present value of dividend paid at the end of the period plus the market price at the end of the period.

Formula:

$$P_0 = \frac{D_1 + P_1}{1 + K}$$

Where,

P_0 = Market price at Year 0

D_1 = Dividend per share at the end of Year 1

P_1 = Market price per share at the end of Year 1

K = Expected rate of return by equity shareholders

Criticism: The unrealistic assumptions of MM thesis render the hypothesis unrealistic and insignificant.

Q. 8. Distinguish between: Financing Decisions & Dividend Decisions.
[June 2015 (5 Marks)]

Ans.

Finance Decisions: One of the important functions of a finance manager is procurement of funds for the firm's investment proposals and its working capital requirements.

In fund raising decisions, he should keep in view the cost of funds from various sources, determination of debt-equity mix, the advantages and disadvantages of debt component in the capital mix, impact of taxation and depreciation in maximization of earnings per share to the equity holders, consideration of control and financial strain on the firm in determining level of gearing, impact of interest and inflation rates on the firm etc.

Dividend Decisions: The dividend decisions of a finance manager are mainly concerned with the decisions relating to the distribution of earnings of the company among its equity holders and the amounts to be retained by the company.

The Investment, Finance and Dividend decisions are interrelated to each other and, therefore, the finance manager while taking any decision, should consider the impact from all the three angles simultaneously.

Q. 9. Write a short note on: Stable dividend policy. [June 2016 (5 Marks)]

Ans.

Stable Dividend Policy: In stable dividend policy the payment of certain sum of money is regularly paid to the shareholders. It is of three types:

- Constant dividend per share:** Here reserve fund is created to pay fixed amount of dividend in the year when the earning of the company is not enough. It is suitable for the firms having stable earning.
- Constant payout ratio:** It means the payment of fixed percentage of earning as dividend every year.
- Stable rupee dividend + extra dividend:** It means the payment of low dividend per share constantly + extra dividend in the year when the company earns high profit.

Merits of stable dividend policy:

- ◆ Helps in creating confidence among the shareholders.
- ◆ Stabilizes market value of shares.
- ◆ Helps in maintaining the goodwill of the company.
- ◆ Gives regular income to the shareholders.

Q. 10. Comment on the following statement from the perspective of Miller and Modigliani:

"It is considered as an essential for the firm to declare the dividend on equity shares to attract the fresh capital in future". [June 2018 (4 Marks)]

Ans. According to Modigliani and Miller, under a perfect market situation, the dividend policy of the firm is irrelevant, as it does not affect the value of the firm. Every investor in a security or a project looks for a return on his investment. The return should be a regular

flow of income. Hence, it is correct that dividend declaration is important for attracting investment. However, the Modigliani and Miller model says that dividend is irrelevant and an investor is equally happy with capital appreciation which can be encashed through home-made dividends by selling part of the investment. What is really important is the return to the investor and not just dividend. If an investor can be reasonably certain that he will receive a return whether as dividend or as capital appreciation then he can be expected to invest and capital can be attracted.

Therefore, Modigliani and Miller do not consider dividend as essential, rather they argue that if the firm does not pay any dividend, a shareholder can create a 'home-made dividend' by selling part of his shares at the market price in the market and avail the cash balance. Therefore a shareholder is indifferent whether company pays dividend or not.

PROBLEMS & SOLUTIONS

Problem No. 1] ABC Ltd. was started a year back with a paid-up capital of ₹ 40,00,000. The other details are as under:

Earnings of the company	: ₹ 4,00,000
Dividend paid	: ₹ 3,20,000
Price earnings ratio	: 12.5
Number of shares	: 40,000

You are required to find out whether the company's dividend payout ratio is optimal, using Walter's formula. [June 2010 (6 Marks)]

Ans.

$$\text{EPS} = \frac{4,00,000}{40,000} = 10 \text{ per share}$$

$$\text{DPS} = \frac{3,20,000}{40,000} = 8 \text{ per share}$$

$$K_c = \frac{1}{\text{P/E Ratio}} = \frac{1}{12.5} = 0.08 \text{ i.e. } 8\%$$

$$\text{Return on Investment (R}_s) = \frac{4,00,000}{40,00,000} \times 100 = 10\%$$

$$P_o = \frac{D + \frac{R_s}{R_c} (E - D)}{R_c}$$

$$= \frac{8 + \frac{0.10}{0.08} (10 - 8)}{0.08}$$

$$= \frac{10.5}{0.08}$$

$$= ₹ 131.25$$

ABC Ltd. is growth firm as $R_a > R_c$. Hence, optimal dividend payout ratio is *nil*. This can be confirmed from following calculations.

$$P_o = \frac{D + \frac{R_a}{R_c} (E - D)}{R_c}$$

$$= \frac{0 + \frac{0.10}{0.08} (10 - 0)}{0.08}$$

$$= \frac{12.5}{0.08}$$

$$= ₹156.25$$

Problem No. 2] Following data relate to Intel Projects (India) Ltd.:

Year ending 31st March	Net Earnings Per Share (₹)	Net Dividend Per Share (₹)
2016	32	17.50
2017	28	18.50
2018	26	20.00
2019	26	21.00
2020	24	22.00

There are 10 lakh equity shares issued and majority of these shares are owned by private investors. There is no debt in the capital structure of the company.

The company has been experiencing difficult trading conditions over the past few years. In the current year, net earnings are likely to be ₹2.20 Crore, which will be just sufficient to pay a maintained dividend of ₹22 per share.

You are required to comment on the company's dividend policy between 2015-2016 to 2019-2020; and on its possible consequences for earnings.

[Dec. 2011 (6 Marks)]

Ans.

Comments on company's dividend policy: From the data stated in the question, it can be observed that, the EPS of Company has fallen from ₹32 to ₹24 over a period of time (from 2005-2006 to 2009-2010). It represents 25% fall in EPS during the said period. But if we see the Net DPS, it is increasing from ₹17.50 to ₹22.00 over three years. EPS and DPS are moving in opposite directions. Assuming that capital structure remains constant, both actual earnings and return on capital employed have gone down. Low EPS indicates that either company is earning less profit or surpluses available with the company are less.

Comments on possible consequences for earnings: It is seen that dividend per share is gradually increasing. The management would probably think that the increase in dividend year after year give indication that company is growing. The increase in dividend per share in a situation of decreasing EPS will adversely affect the retention ratio and will adversely affect its long term profitability. This will also weaken the company's competitive position and wrong signals to the investors which may cause to fall in market price of company's share.

Problem No. 3] Abhishek Steel Ltd. has one lakh equity shares outstanding which are selling at ₹ 100 each. Its capitalization rate is 14%. The company is expecting ₹ 65 lakh income for the current year and is planning to pay dividend amounting to ₹ 4 lakh. The company wants to invest in a new project which will cost ₹ 75 lakh. It is assumed that the Modigliani and Miller Model on dividend policy is applicable to the company.

Compute the price per share at the end of the current year and the number of shares to be issued for financing the investment when:

- (i) Dividend amounting to ₹ 4 lakh is paid.
 (ii) Dividend is not paid. [June 2013 (12 Marks)], [Dec. 2013 (12 Marks)]

Ans.

(a) If dividend is not declared:

$$100 = \frac{0 + P_1}{1 + 0.14}$$

$$P_1 = 114$$

(b) If dividend is declared:

$$100 = \frac{4 + P_1}{1 + 0.14}$$

$$114 = 4 + P_1$$

$$P_1 = 110$$

Calculation of number of shares to be issued:

Particulars	If dividend is not declared	If dividend is declared
Net income	65,00,000	65,00,000
(-) Dividend	-	(4,00,000)
Retained earnings	65,00,000	61,00,000
New investment	75,00,000	75,00,000
Amount to be raised by issued of new shares	10,00,000	14,00,000
Market price per share	114	110
Number of shares to be issued	8,771.93	12,727.27

Verification of MM Model:

Particulars	If dividend is not declared	If dividend is declared
Existing shares	1,00,000	1,00,000
New shares to be issued	87,719.93	12,727.27
Total number of shares	1,08,771.93	1,12,727.27
Market price per share	114	110
Total market value at the end of year	1,24,00,000	1,24,00,000

Problem No. 4] Anurag has invested in a share whose dividend is expected to grow @ 15% for 5 years and thereafter @ 5% till life of the company. Find out the value of the share, if current dividend is ₹ 4 per share and investors required rate of return is 6%. [June 2015 (4 Marks)]

Ans.

Year	Growth Rate	Dividend	Cash Flow	PV Factor @ 6%	PV
1	15%	4.60	4.60	0.943	4.34
2	15%	5.29	5.29	0.890	4.71
3	15%	6.08	6.08	0.840	5.11
4	15%	7.00	7.00	0.792	5.54
5	15%	8.05	8.05 + 845 = 853.05	0.747	637.23
6	5%	8.45			656.93

$$P_s = \frac{D_0}{K_c - g} = \frac{8.45}{0.06 - 0.05} = \frac{8.45}{0.01} = 845$$

Intrinsic value of the company is ₹656.93.

Problem No. 5] The following information is available in respect of Sober Ltd.:

- No. of shares outstanding : 1 lakh
- Earnings per share : ₹4
- Dividend payout per share : ₹2.4
- Equity capitalization rate : 12%
- Rate of return on investment : 15%

You are required to calculate —

- (i) Market value per share as per Walter's Model.
 - (ii) Dividend payout ratio to keep share price at ₹40.
 - (iii) Optimum dividend payout ratio as per Walter's Model.
 - (iv) Market value per share at the optimum dividend payout ratio based on Walter's Model.
- [June 2015 (4 Marks)]

Ans.

- (i) Market value per share as per Walter's Model:

$$\begin{aligned}
 P &= \frac{D + \frac{R_s}{R_c} (E - D)}{R_c} \\
 &= \frac{2.4 + \frac{0.15}{0.12} (4 - 2.4)}{0.12} \\
 &= \frac{4.4}{0.12} \\
 &= ₹36.67
 \end{aligned}$$

- (ii) Dividend payout ratio to keep share price at ₹40:

$$P = \frac{D + \frac{R_s}{R_c} (E - D)}{R_c}$$

$$40 = \frac{x + \frac{0.15}{0.12} (4 - x)}{0.12}$$

$$4.8 = x + \frac{0.6 - 0.15x}{0.12}$$

$$4.8 = \frac{0.12x + 0.6 - 0.15x}{0.12}$$

$$0.576 = 0.12x + 0.6 - 0.15x$$

$$0.576 = 0.6 - 0.03x$$

$$0.024 = 0.03x$$

$$x = D = \text{Dividend} = 0.8$$

$$\text{Payout ratio} = \frac{0.8}{4} \times 100 = 20\%$$

(iii) Sober Ltd. is growth firm as its rate of return on investment is greater than cost of capital i.e. $R_a > R_c$. Optimal payout ratio as per Walter's Model is *nil*.

(iv) Market value per share at the optimum dividend payout ratio based on Walter's Model:

$$P = \frac{D + \frac{R_a}{R_c} (E - D)}{R_c}$$

$$= \frac{0 + \frac{0.15}{0.12} (4 - 0)}{0.12}$$

$$= \frac{5}{0.12}$$

$$= ₹41.67$$

Problem No. 6] D Ltd. has 10 lakh equity shares outstanding at the beginning of the accounting year. The current market price of the shares is ₹150 each. The board of directors of the company has recommended dividend of ₹8 per share. The rate of capitalization, appropriate to the risk class to which company belongs is 12%:

- (i) Based on MM Approach, calculate the market price of the shares of the company when recommended dividend is (a) declared and (b) not declared.
- (ii) How many shares are to be issued by the company at the end of accounting year on the assumption that the net income for the year is ₹2 Crore and the investment budget is ₹4 Crore.
- (iii) Show that market value of the shares at the end of accounting year will remain same whether dividend is declared or not declared. [Dec. 2015 (4 Marks)]

Ans.

Calculation of price of share under MM Model:

$$P_0 = \frac{D_1 + P_1}{1 + K_e}$$

(a) If dividend is not declared:

$$150 = \frac{0 + P_1}{1 + 0.12}$$

$$P_1 = 168$$

(b) If dividend is declared:

$$150 = \frac{8 + P_1}{1 + 0.12}$$

$$168 = 8 + P_1$$

$$P_1 = 160$$

Calculation of number of shares to be issued:

Particulars	If dividend is not declared	If dividend is declared
Net income	2,00,00,000	2,00,00,000
(-) Dividend	-	(80,00,000)
Retained earnings	2,00,00,000	1,20,00,000
New investment	4,00,00,000	4,00,00,000
Amount to be raised by issue of new shares	2,00,00,000	2,80,00,000
Market price per share	168	160
Number of shares to be issued	1,19,047.62	1,75,000

Verification of MM Model:

Particulars	If dividend is not declared	If dividend is declared
Existing shares	10,00,000	10,00,000
New shares to be issued	1,19,047.62	1,75,000
Total number of shares	11,19,047.62	11,75,000
Market price per share	168	160
Total market value at the end of year	18,80,00,000	18,80,00,000

Problem No. 7] Net profit before tax of Acumen Ltd. is ₹ 17,50,000. The company has 1,00,000 equity shares of face value ₹ 10 each, fully paid-up. Current market price of the shares is ₹ 85 per share. Income-tax @ 30% applies to the company. Compute the P/E ratio for the company. [June 2016 (4 Marks)]

Ans.

Profit before tax	17,50,000
(-) Tax @ 30%	(5,25,000)
Profit available to equity shareholders	12,25,000

$$\text{EPS} = \frac{12,25,000}{1,00,000} = 12.25 \text{ per share}$$

$$\text{P/E Ratio} = \frac{85}{12.25} = 6.94$$

Problem No. 8] Following details are available to you for two companies, Beauty Ltd. and Pretty Ltd.:

	<i>Beauty Ltd.</i>	<i>Pretty Ltd.</i>
Internal rate of return (%)	15	10
Capitalization rate (%)	15	10
Earnings per share (₹)	12	10
Cash dividend per share (₹)	5	2

Calculate the value of an equity share for the companies. [June 2016 (4 Marks)]

Ans.

$$\begin{aligned} P &= \frac{D + \frac{R_a}{R_c} (E - D)}{R_c} \\ &= \frac{5 + \frac{0.15}{0.15} (12 - 5)}{0.15} \\ &= \frac{12}{0.15} \\ &= ₹80 \end{aligned}$$

$$\begin{aligned} P &= \frac{D + \frac{R_a}{R_c} (E - D)}{R_c} \\ &= \frac{2 + \frac{0.10}{0.10} (10 - 2)}{0.15} \\ &= \frac{10}{0.15} \\ &= ₹66.67 \end{aligned}$$

Problem No. 9] The following information pertains to M/s Kanagana Limited:

Earnings of the company	₹5 lakh
Dividend payout ratio	60%
No. of shares outstanding	1,00,000
Equity capitalization rate	12%
Rate of return on investment	15%

What would be the market value per share as per Walter's model?

[June 2017 (2 Marks)]

Ans.

$$\text{EPS} = \frac{5,00,000}{1,00,000} = ₹5$$

$$D = 5 \times 60\% = ₹3$$

$$\begin{aligned}
 P_0 &= \frac{D + \frac{R_s}{R_c} (E - D)}{R_c} \\
 &= \frac{3 + \frac{0.15}{0.12} (5 - 3)}{0.12} \\
 &= \frac{5.5}{0.12} \\
 &= ₹45.83
 \end{aligned}$$

Problem No. 10] The following figures are provided to you for ABC Ltd.:

Net profit before tax = ₹17,50,000

The company has 1,00,000 number of equity shares of face value ₹10 fully paid-up. The current market price of the equity shares is ₹85 per share.

The Income-tax @ 30% apply to company.

What will be that P/E ratio for the company?

[Dec. 2017 (4 Marks)]

Ans.

Net profit before tax	17,50,000
(-) Tax @ 30%	(5,25,000)
Profit after tax/profit available to equity shareholder	12,25,000

$$\begin{aligned}
 \text{Earnings Per Share} &= \frac{\text{Profit available for equity shareholders}}{\text{No. of Equity Shares}} \\
 &= \frac{12,25,000}{1,00,000} \\
 &= 12.25 \text{ per share}
 \end{aligned}$$

$$\text{P/E Ratio} = \frac{\text{Market Price}}{\text{EPS}} = \frac{85}{12.25} = 6.94$$

Problem No. 11] XYZ Ltd. has 25,000 outstanding shares at current market price of ₹100. It belongs to a risk class with capitalization rate of 20%. The company expects to earn a net profit of ₹5,00,000 during a year.

What will be the price of share if dividend is not paid?

[Dec. 2017 (4 Marks)]

Ans.

Calculation of price of share under MM Model if dividend is not paid:

$$P_0 = \frac{D_1 + P_1}{1 + K_c}$$

$$100 = \frac{0 + P_1}{1 + 0.2}$$

$$P_1 = 120$$

Problem No. 12] Vivu Ltd. is a reputed chemical producing company. Vivu's shares are quoted in the market at the price of ₹340. Roma Mutual Fund's manager is thinking to buy the shares of Vivu. Advice the manager of Roma with respect to buy decision through the application of Gordon model based on the following information.

- (1) The expected rate of return by equity shareholders is 10%.
- (2) The retention ratio is 40%.
- (3) The earnings per share recorded in the recent past year is ₹20.
- (4) The expected earnings per share for next year is ₹25.
- (5) The internal rate of return of Vivu Ltd. is 15%.

[June 2018 (4 Marks)]

Ans.

$$P_0 = \frac{E(1-b)}{K_e - br}$$

Where,

P_0 = Market price at Year 0

E = Earnings Per Share (EPS)

b = Retention Ratio

br = g = Growth rate

K_e = Capitalization rate/cost of capital

$$P_0 = \frac{25(1-0.4)}{0.10 - (0.4 \times 0.15)} = \frac{15}{0.04} = 375$$

Expected price of Vivu Ltd. as per Gordon's Model is ₹375 whereas current market price of share is ₹340. Thus, Manager of Roma Mutual Fund is advised to buy the shares as the market price of shares of Vivu Ltd. is less than expected price.

Problem No. 13] The Earning per share of a company is ₹16. The market capitalization rate applicable to the company is 12.5%. Retained earnings can be employed to yield a return of 10%. The company is considering a payout of 25%, 50% and 75%. Which of these would maximize the wealth of shareholders as per Walter's Model of dividend? [June 2019 (4 Marks)]

Ans.

In given case, the firm is declining firm as its rate of return on investment is less than cost of capital i.e. $R_i < R_c$. Optimal payout ratio as per Walter's Model is 100%. Thus, increase in payout ratio increases the market price for declining firm.

Dividend payout ratio is 25%:

$$16 \times 25\% = 4$$

$$P = \frac{D + \frac{R_i}{R_c}(E - D)}{R_c}$$

$$\begin{aligned}
 &= \frac{4 + \frac{0.10}{0.125} (16 - 4)}{0.125} \\
 &= \frac{13.6}{0.125} \\
 &= ₹ 108.80
 \end{aligned}$$

Dividend payout ratio is 50%:

$$16 \times 50\% = 8$$

$$\begin{aligned}
 P &= \frac{D + \frac{R_a}{R_c} (E - D)}{R_c} \\
 &= \frac{8 + \frac{0.10}{0.125} (16 - 8)}{0.125} \\
 &= \frac{14.4}{0.125} \\
 &= ₹ 115.20
 \end{aligned}$$

Dividend payout ratio is 75%:

$$16 \times 75\% = 12$$

$$\begin{aligned}
 P &= \frac{D + \frac{R_a}{R_c} (E - D)}{R_c} \\
 &= \frac{12 + \frac{0.10}{0.125} (16 - 12)}{0.125} \\
 &= \frac{15.2}{0.125} \\
 &= ₹ 121.60
 \end{aligned}$$

Above result shows that the wealth of the shareholders would be maximized when the company adopts 75% payout ratio.

Problem No. 14] ABC Autos Ltd. started its business one year back with paid-up equity capital of ₹ 40 Lakh. Other details are as under:

Earnings of the year	: ₹ 4,00,000
Dividend paid	: ₹ 3,20,000
Price-earnings ratio	: 12.5
Number of shares	: 40,000

You are required to find out whether the company's dividend payout ratio is optimal using Walter's Model.

[Dec. 2020 (4 Marks)]

Ans.

$$\text{EPS} = \frac{4,00,000}{40,000} = 10 \text{ per share}; \quad \text{DPS} = \frac{3,20,000}{40,000} = 8 \text{ per share}$$

$$K_e = \frac{1}{\text{P/E Ratio}} = \frac{1}{12.5} = 0.08 \text{ i.e. } 8\%$$

$$\text{Rate of return on Investment } (R_a) = \frac{4,00,000}{40,00,000} \times 100 = 10\%$$

$$\begin{aligned} P_o &= \frac{D + \frac{R_a}{R_c} (E - D)}{R_c} \\ &= \frac{8 + \frac{0.10}{0.08} (10 - 8)}{0.08} \\ &= \frac{10.5}{0.08} \\ &= ₹ 131.25 \end{aligned}$$

ABC Ltd. is growth firm as $R_a > R_c$. Hence, optimal dividend payout ratio is nil. This can be confirmed from following calculations.

$$\begin{aligned} P_o &= \frac{D + \frac{R_a}{R_c} (E - D)}{R_c} \\ &= \frac{0 + \frac{0.10}{0.08} (10 - 0)}{0.08} \\ &= \frac{12.5}{0.08} \\ &= ₹ 156.25 \end{aligned}$$

Problem No. 15] Raj Limited had 50,000 equity shares of ₹10 each outstanding on 1st January. The shares are currently being quoted at par in the market. The company now intends to pay a dividend of ₹2 per share for the current calendar year. It belongs to a risk class whose appropriate capitalization rate is 15 per cent. Using Modigliani-Miller model and assuming no taxes, ascertain the price of the company's share as it is likely to prevail at the end of the year under following conditions:

- (a) When dividend is declared.
- (b) When no dividend is declared.

(c) Also, find out the number of new equity shares that the company must issue to meet its investment needs of ₹ 2 lakh, assuming a net income of ₹1.1 lakh and dividend is paid. [June 2021 (4 Marks)]

Ans.

Calculation of price of share under MM Model:

$$P_0 = \frac{D_1 + P_1}{1 + K_e}$$

(a) If dividend is not declared:

$$10 = \frac{0 + P_1}{1 + 0.15}$$

$$P_1 = 11.5$$

(b) If dividend is declared:

$$10 = \frac{2 + P_1}{1 + 0.15}$$

$$11.5 = 2 + P_1$$

$$P_1 = 9.5$$

Calculation of number of shares to be issued if dividend is not declared:

Particulars	If dividend is not declared	If dividend is declared
Net income	1,10,000	1,10,000
(-) Dividend	-	(1,00,000)
Retained earnings	1,10,000	10,000
New investment	2,00,000	2,00,000
Amount to be raised by issued of new shares	90,000	1,90,000
Market price per share	11.5	9.5
Number of shares to be issued	7,826.09	20,000

Verification of MM Model:

Particulars	If dividend is not declared	If dividend is declared
Existing shares	50,000	50,000
New shares to be issued	7,826.09	20,000
Total number of shares	57,826.09	70,000
Market price per share	11.5	9.5
Total market value at the end of year	6,65,000	6,65,000

Problem No. 16] Companies U and L are identical in every respect, except that Company U is unlevered while Company L is levered. Company L has 20 lakh of 8% debentures outstanding.

Assume that:

(i) All the MM assumptions are met.

(ii) The tax rate is 50%.

(iii) EBIT is ₹ 6.00 lakh.

(iv) Equity capitalization rate for Company U is 10%.

What would be the value for each firm according to MM's approach?

[Dec. 2021 (4 Marks)]

Ans.

Value of unlevered company: (Company U)

Particulars	₹
EBIT	6,00,000
(-) Interest	-
EBT	6,00,000
(-) Tax @ 50%	(3,00,000)
PAT	3,00,000
Capitalization rate	10%
Market value of equity (PAT/Capitalization rate) × 100	30,00,000

According to MM, the value of levered firm would exceed that of the unlevered firm by an amount equal to the levered firms debt multiplied by the tax rate.

Value of unlevered firm + (Value of debt × Tax rate) = Total Value of levered firm

Value of the Company L with ₹ 20,00,000 in debt:

$$30,00,000 + (20,00,000 \times 50\%) = 40,00,000$$

$$\text{Total value} - \text{Value of debt} = \text{Value of equity}$$

$$40,00,000 - 20,00,000 = 20,00,000$$

WORKING CAPITAL MANAGEMENT

UNIT I : WORKING CAPITAL MANAGEMENT

THEORETICAL QUESTIONS

Q. 1. What is the concept of 'Operating Cycle'? Why it is important in working capital management? Give a suitable example to illustrate the operating cycle concept. [June 2003 (6 Marks)], [June 2011 (5 Marks)]

Or

Length of operating cycle is the major determinants of working capital needs of a business firms. Explain. [June 2006 (5 Marks)], [June 2016 (5 Marks)]

Ans. A useful tool for managing working capital is the operating cycle. The operating cycle analyzes the accounts receivable, inventory and accounts payable cycles in terms of number of days.

Working capital cycle indicates the length of time between the companies pays for materials, entering into stock and receiving the cash from sales of finished goods. It can be determined by adding the number of days required for each stage in the cycle.

For example, a company holds raw materials on an average for 60 days, production process needs 15 days, finished goods are held for 30 days, 30 days credit is extended to debtors and it gets credit from the supplier for 15 days. The total of all these, 120 days ($60 + 15 + 30 + 30 - 15$) is the total working capital cycle.

The determination of working capital cycle helps in the forecast, control and management of working capital. It indicates the total time lag and the relative significance of its constituent parts. The duration of working capital cycle may vary depending on the nature of the business.

Computation of working capital with help of operating cycle concept:

- (1) **Percentage of Sales Method:** Based on the past experience, some percentage of sales may be taken for determining the quantum of working capital.
- (2) **Regression Analysis Method:** The relationship between sales and working capital and its various components may be plotted on scatter diagram and the average percentage of past 5 years may be ascertained. This average percentage of sales may be taken as working capital. Similar exercise may be carried out at the beginning of

the year for assessing, the working capital requirement. This method is suitable for simple as well complex situations.

- (3) **Operating Cycle Approach:** In the form of an equation, the operating cycle process can be expressed as follows:

$$\text{Operating Cycle} = R + W + F + D - C$$

Where,

R = Raw material conversion period

W = Work in progress conversion period

F = Finished goods conversion period

D = Debtors collection period

C = Creditors payment period

The various components of operating cycle may be calculated as shown below:

$$\text{Raw Material Conversion Period} = \frac{\text{Average Raw Material Stock}}{\text{Raw Material Consumed in a year}} \times 365 \text{ days}$$

$$\text{WIP Conversion Period} = \frac{\text{Average Stock of WIP}}{\text{Annual Cost of Production}} \times 365 \text{ days}$$

$$\text{Finished Goods Conversion Period} = \frac{\text{Average Stock of Finished Goods}}{\text{Annual Cost of Sales}} \times 365 \text{ days}$$

$$\text{Debtors Collection Period} = \frac{\text{Average Receivables}}{\text{Annual Sales}} \times 365 \text{ Days}$$

$$\text{Creditors Payment Period} = \frac{\text{Average Accounts Payable}}{\text{Annual Purchase}} \times 365 \text{ days}$$

$$\text{Working Capital} = \frac{\text{Operating Cost}}{365 \text{ days}} \times \text{Operating Cycle days}$$

Q. 2. Distinguish between: Hedging Approach & Conservative Approach
[June 2004 (5 Marks)], [Dec. 2004 (5 Marks)]

Ans. The financing of current assets involves a trade-off between risk and return. A firm can choose from short or long term sources of finance. Short term financing is less expensive than long term financing but at the same time, short term financing involves greater risk than long term financing.

Depending on the mix of short term and long term financing, the approach followed by a company may be referred as matching approach, conservative approach and aggressive approach.

- (1) **Conservative Approach:** A higher current assets/fixed assets ratio indicates a conservative current assets policy. A conservative policy implies greater liquidity and lower risk.
- (2) **Aggressive Approach:** A lower current assets/fixed assets ratio means an aggressive current assets policy. Aggressive policy indicates higher risk and poor liquidity.
- (3) **Matching/hedging Approach:** Matching/hedging current assets policy will fall in the middle of conservative and aggressive policies. The current assets policy of most of the firms may fall between these two extreme policies.

Q. 3. Write a short note on: Determinants of working capital
[June 2007 (5 Marks)], [Dec. 2014 (4 Marks)]

Ans. **Determinants of working capital:** Following factors determine the working capital requirement:

- Nature and size of business
- Manufacturing cycle
- Credit policy – both for customers and from suppliers
- Business fluctuations and seasonal fluctuations
- Production policy
- Growth and expansion activities
- Profit margin and profit appropriation *i.e.* profit, tax, dividends and retained earnings
- Volume of sales and price level changes.
- Operating efficiency
- Inventory turnover
- Liquidity and profitability
- Inflation factor
- Attitude to risk
- Profit planning and control
- Changes in technology
- Degree of mechanization
- Government policy.

Q. 4. Adequacy of current assets is myth. Comment. **[Dec. 2007 (5 Marks)]**

Ans. Every business needs adequate liquid resources in order to maintain day-to-day cash flow. It needs enough cash to pay wages and salaries as they fall due and to pay creditors if it is to keep its workforce engaged and ensure its supplies.

Maintaining adequate working capital is not just important in the short-term. Sufficient liquidity must be maintained in order to ensure the survival of the business in the long-term as well. Even a profitable business may fail if it does not have adequate cash flow to meet its liabilities as they fall due.

It is the job of the finance manager to estimate the requirements of working capital carefully and determine the optimum level of investment in working capital. In order to have adequate working capital firm must have adequate current assets. So, a firm must maintain adequate current assets. It is not simply a myth but a necessity for a firm.

Q. 5. Write a short note on: Working capital and dividend policy
[Dec. 2008 (5 Marks)]

Ans. A desire to maintain an established dividend policy may affect the volume of working capital, or changes in working capital may bring about an adjustment of dividend policy. Payment of dividend may reduce cash in current assets considerably which in turn may reduce the available working capital for the company.

In either event, the relationship between dividend policy and working capital is well established, and very few companies ever declare a dividend without giving consideration to its effect on cash and their needs for cash.

Q. 6. Distinguish between: Financing of current assets & Financing of fixed assets
[June 2009 (5 Marks)]

Ans. Following are the main points of difference between financing of current assets & financing of fixed assets:

Points	Financing of Current Assets	Financing of Fixed Assets
Meaning	Current assets are those assets which are converted in to cash within a period of one year.	Fixed assets are those assets which are held by the companies to be used in production and administrative process for more than one year.
Finance	Current assets are generally financed through short term finance.	Fixed assets are generally financed through long term finance.
Mode of finance	Current assets are usually financed through mode of overdraft, cash credit, public deposits etc.	Fixed assets are usually financed through equity capital, preference capital, debentures, bonds and long term bank loans.
Share in finance	Share of current assets in total finance is minimum.	Share of fixed assets in total finance is more.
Type of assets	Financing of current assets covers finance in assets like debtors, inventory & cash etc.	Financing of fixed assets covers finance in assets like land & building, plant & machinery etc.

Q. 7. Failure of a firm is technical if it is unable to meet its current obligations.
Comment. [June 2011 (5 Marks)]

Ans. Failure of a firm is technical if it is unable to meet its current obligations. The failure could be temporary and might be remediable. When liabilities exceed assets *i.e.* the net worth becomes negative, bankruptcy as commonly understood, arises. The technical bankruptcy can be ascertained by comparing current assets and current liabilities *i.e.* working out current or/and quick ratios. If the amount of current assets is not sufficient to meet the current liabilities, it is known as technical failure of firm. However, this type of failure is related to short term only and firm can recover from such situation in long-term.

Q. 8. The risk of becoming technically insolvent is measured by using the tool of net working capital by the Finance Managers. Comment. [Dec. 2012 (5 Marks)]

Or

Current assets are financed by current liabilities. Comment. [June 2014 (5 Marks)]

Or

Working capital management is all about deciding the level, structure and financing of current assets. Comment. [Dec. 2016 (5 Marks)]

Or

Discuss Liquidity v. Profitability in management of working capital.

[June 2021 (4 Marks)]

Ans. In formulating a firm's working capital policy, an important consideration is the trade-off between profitability and risk. In other words, the level of a firm's Net Working Capital has a bearing on its profitability as well as risk. The term profitability here means profits after expenses. The term risk is defined as the probability that a firm will become technically insolvent so that it will not be able to meet its obligations when they become due for payment.

The risk of becoming technically insolvent is measured using net working capital. It is assumed that the greater the amount of Net Working Capital, the less risky the firm is, and vice versa. The relationship between liquidity, Net Working Capital and risk is such that if either net working capital or liquidity increases, the firm's risk decreases.

What proportion of current assets should be financed by current liabilities and how much by long term sources will depend, apart from liquidity-profitability trade off, on the risk perception of the management. Two broad policy alternatives, in this respect, are:

- (a) **A conservative current asset financing policy:** It relies less on short term bank financing and more on long term sources. No doubt it reduces the risk that the firm will be unable to repay its short term debt periodically, but enhances the cost of financing.
- (b) **An aggressive current Asset Financing Policy:** It relies heavily on short term bank finance and seeks to reduce dependence on long term financing. It exposes the firm to a higher degree of risk, but reduces the average cost of financing thereby resulting in higher profits.

Q. 9. "The balance sheet fails to depict an exact picture of the current assets." Elucidate. [Dec. 2014 (5 Marks)]

Ans. Balance sheet of company provides information of a company as on particular date. The position at the end of a day is a static position and not representative of the entire year. For example, a agro-based industry may hold large stock in non-season in which closing date of year may fall may lead to large current assets due large holding of stock on the other hand is closing date of balance sheet falls in seasonal period there may less stock which may lead to less current assets. In such case different norms are to be applied for seasonal period and non-seasonal period.

Thus, is correct to say that the balance sheet fails to depict an exact picture of the current assets.

Q. 10. Write a short note on: Sources of working capital

Or

Deferred payment of taxes is a source of working capital. Comment. [Dec. 2013 (5 Marks)]

Or

There are various sources of permanent working capital. Comment. [Dec. 2015 (4 Marks)]

Ans. Sources of financing of working capital differ as per the classification of working capital into permanent working capital and variable working capital.

1. Sources of Permanent Working Capital:

- (a) Owner's funds are the main source. Sale of equity stock or preference stock could provide a permanent working capital to the business with no burden of repayment particularly during short period. These funds can be retained in the business permanently. Permanent working capital provides more strength to the business.
- (b) Another source of permanent working capital is bond financing but it has a fixed maturity period and ultimately repayment has to be made. For repayment of this source, company provides sinking funds for retirement of bonds issued for permanent working capital.
- (c) Term loan from banks or financial institutions has the same characteristics as the bond financing of permanent working capital.
- (d) Short-term borrowing is also a source of working capital finance on permanent basis.

2. Source of Variable Working Capital:

Working capital required for limited period of time may be secured from temporary sources as discussed below:

- (a) **Trade Creditors:** Trade credit provide a quite effective source of financing variable working capital for the period falling between the point goods are purchased and the point when payment is made. The longer this period, the more advantageous it becomes for the firm to avoid efforts of seeking finance for holding inventories or receivables.
- (b) **Bank Loan:** Bank loan is used for variable or temporary working capital. Such loans run from 30 days to several months with renewals being very common. These loans are granted by bank on the goodwill and credit worthiness of the borrower, and collateral may include goods, accounts receivable or Government obligations or other marketable securities, commodities and equipments.
- (c) **Commercial Paper:** It can be defined as a short term money market instrument, issued in the form of promissory notes for a fixed maturity. It will be totally unsecured and will have a maturity period ranging from 90 days to 180 days. It will meet the short term finance requirements of the companies and will be good short term investment for parking temporary surpluses by corporate bodies.
- (d) **Depreciation as a source of working capital:** Increase in working capital results from the difference in the amount of depreciation allowance deducted from earnings and new investment made in fixed assets. Usually, the entire amount deducted towards depreciation on fixed assets is not invested in the acquisition of fixed assets and is saved and utilised in business as working capital. This is also a temporary source of working capital so long as the acquisition of fixed asset is deferred.
- (e) **Tax liabilities:** Deferred payment of taxes is also a source of working capital. Taxes are not paid from day-to-day, but estimated liability for taxes is indicated in Balance Sheet. Besides, business organisations collect taxes by way of income tax payable on salaries of staff deducted at source, old age retirement benefits, excise taxes, sales taxes, etc. and retain them for some period in business to be used as working capital.
- (f) Other miscellaneous sources are Dealer Deposits, Customer advances etc.

Q. 11. "Working Capital Leverage measures the sensitivity of return on investment in working capital." Comment with example. [June 2017 (5 Marks)]

Ans. Working capital leverage is measured as under:

$$\text{Working Capital Leverage} = \frac{\% \text{ Change in ROCE}}{\% \text{ Change in Current Assets}}$$

OR

$$= \frac{\text{Current Assets}}{\text{Total Assets} - \Delta \text{ Current Assets}}$$

$\Delta \text{ Current Assets} = \text{Change in Current Assets}$

Return on capital employed (ROCE):

$$\text{ROCE} = \frac{\text{Earnings Before Interest \& Tax (EBIT)}}{\text{Total Assets or Capital Employed}}$$

One of the important objective of working capital management is by maintain the optimum levels of investment in current assets and by reducing the levels of current liabilities, the company can minimize investment in working capital thereby improvement in return on capital employed is achieved. The term working capital leverage, refer to the impact of levels of working capital company's profitability. The working capital management should improve the productivity of investment in current assets and ultimately it will increase the return in capital employed.

Q. 12. "Does the Balance Sheet give a true picture of Current Assets?" Comment. [June 2017 (5 Marks)]

Ans. Current assets as at a particular date may not be representative of the state of affairs prevailing on a day to day basis throughout the year. In the balance sheet we review that position of current assets as on a particular date only. In order to even out the effects of daily variation in the level of current assets, it is advisable to take average of weekly, monthly or quarterly holding depending upon the nature of the industry and turnover of the assets. The position at the end of a day is a static position which is not representative of the entire year. By taking period averages some amount of dynamism is brought into the picture.

Sometimes, an industry might have seasonal peaks or troughs of working capital requirement. For example, agro based industry like fruit processing unit would need to stock more raw material during the peak season when the crop has been harvested than during the lean season. The high level of current assets can be nothing but a fiction when we seek to realize the current assets. It may happen that the inventory carried by the firm may consist of obsolete items, packing materials, finished goods which have been rejected by buyers and items like dies and tools which are more fixed than current in character. Prudence is required to get rid of current assets like obsolete items, packing material and finished goods which may have been rejected by buyers.

On the other hand, the current liabilities are more ascertainable and less fictions. The payment of these liabilities, if not possible from the current assets, has to be arranged from long term sources of funds which may result in a mismatch that is not conducive to financial health of the firm.

Q. 13. Differentiate between Regression Analysis Method and Per cent of Sales Method for estimating Working Capital needs.

[June 2017 (4 Marks)]

Ans. Regression analysis method: The regression analysis method is very useful statistical technique of forecasting working capital requirements. It helps in making projections after establishing the average relationship in the past years between sales and the working capital and its various components.

The analysis can be carried out through the graphic portrayals (scatter diagram) or through mathematical formulae. The relationship between sales and working capital may be simple and direct indicating complete linearity between the two or may be complex in differing degrees involving simple linear regression and multiple regression situations. This method is suitable for simple as well as complex situations.

Percent of sales method: It is a traditional and simple method of determining the level of working capital and its components. In this method, working capital is determined on the basis of past experience. If over the years, the relationship between sales and working capital is found to be stable, then this relationship may be taken as base for determining the working capital for future.

This method is simple, easy to understand and useful in forecasting of working capital. However, this method is criticized for the assumption of linear relationship, between sales and working capital. Therefore, this method may not be universally applicable.

Q. 14. Discuss what are the various sources of Permanent Working Capital.

[Dec. 2017 (4 Marks)]

Ans.

Sources of Permanent Working Capital:

- (a) Owner's funds are the main source. Sale of equity stock or preference stock could provide a permanent working capital to the business with no burden of repayment particularly during short period. These funds can be retained in the business permanently. Permanent working capital provides more strength to the business.
- (b) Another source of permanent working capital is bond financing but it has a fixed maturity period and ultimately repayment has to be made. For repayment of this source, company provides sinking funds for retirement of bonds issued for permanent working capital.
- (c) Term loan from banks or financial institutions has the same characteristics as the bond financing of permanent working capital.
- (d) Short-term borrowing is also a source of working capital finance on permanent basis.

Q. 15. Negative working capital is a sign that the company may be facing serious financial trouble or bankruptcy.

[June 2019 (5 Marks)]

Ans. Generally, negative working capital is a sign that the company may be facing bankruptcy or a serious financial trouble. Under the best circumstances, poor working capital leads to financial pressure on a company, increased borrowing, and late payments to creditor which may result in a lower credit rating. A lower credit rating means banks charge a higher interest rate, which can cost a corporation a lot of money over time.

Thus, a Company with negative working capital may lack the funds necessary for growth of the company which may further lead to bankruptcy and financial trouble for the company. In some rare circumstances, a negative working capital can also be a sign of managerial efficiency in a business with low inventory and accounts receivable (which means they operate on an almost strictly cash basis and convert cash into capital assets).

Q. 16. Movements of the business cycle influence working capital changes at significant level.
[Dec, 2021 (5 Marks)]

Ans. Movements of the business cycle influence Working Capital changes at significant level: The recurring movements of the business cycle influence working capital changes. As business recedes, companies tend to defer capital replacement programmes and deflect depreciations to liquid balances rather than fixed assets. Similarly, curtailed sales reduce amounts receivable and modify inventory purchases, thereby contributing further to the accumulation of cash balances.

Conversely, the sales, capital, and inventory expansions that accompany a boom produce a greater concentration of credit items in the balance sheet. The pressure on company finances during boom years is reflected in the business drive for loans and the high interest rate of these years as compared with a reversal of such conditions during the periods of economic decline.

PROBLEMS & SOLUTIONS

Problem No. 1] Saraswati Engineering Company is considering its working capital investment for the next year. Estimated fixed assets and current liabilities for the next year are ₹ 2.60 Crore and ₹ 2.34 Crore respectively. Sales and Profit Before Interest and Taxes (PBIT) depend on investment in current assets – particularly inventories and book debts. The company is examining the following alternative working capital policies:

Working capital policy	Investment in current assets (₹ in Crore)	Estimated sales (₹ in Crore)	PBIT (₹ in Crore)
Conservative	4.50	12.30	1.23
Moderate	3.90	11.50	1.15
Aggressive	2.60	10.00	1.00

You are required to calculate the rate of return on total assets for each policy.

[Dec. 2015 (4 Marks)]

Ans.
Balance sheets under different Current Assets Policies:

(₹ in Crore)

Particulars	Conservative Policy	Moderate Policy	Aggressive Policy
Current Assets	4.50	3.90	2.60
Fixed Assets	2.60	2.60	2.60
Total Assets	7.10	6.50	5.20
Current Liabilities	2.34	2.34	2.34

Particulars	Conservative Policy	Moderate Policy	Aggressive Policy
Estimated sales	12.30	11.50	10.00
Estimated EBIT	1.23	1.15	1.00
Current Ratio [CA/CL]	1.92	1.67	1.11
(i) Rate of return on total assets [EBIT/Total Assets] × 100	17.32%	17.69%	19.23%
(ii) Net working capital position	2.16	1.56	0.26
(iii) Current assets to fixed assets ratio	1.73	1.50	1.00

Risk return trade-off: The net working capital or current ratio is measure of risk. Rate of return on total assets is a measure of return. The expected risk and return are minimum in case of conservative investment policy and maximum in case of aggressive investment policy. The firm can improve profitability by reducing investment in working capital.

Problem No. 2] A company has prepared its annual budget, relevant details of which are reproduced below:

- (i) Sales ₹46.80 lakh : 78,000 units
(25% cash sales and balance on credit)
- (ii) Raw material cost : 60% of sales value
- (iii) Labour cost : ₹6 per unit
- (iv) Variable overheads : ₹1 per unit
- (v) Fixed overheads : ₹5,00,000
(including ₹1,10,000 as depreciation)
- (vi) Budgeted stock levels:
 - Raw materials : 3 weeks
 - Work-in-progress : 1 week
(material 100%; labour & overheads 50%)
 - Finished goods : 2 weeks
- (vii) Debtors are allowed credit : 4 weeks
- (viii) Creditors allow : 4 weeks credit
- (ix) Lag in payment of overheads : 2 weeks
- (x) Cash in hand required : ₹50,000
- (xi) Wages are paid as follows:
 - (a) For 1st and 2nd week : in the 3rd week
 - (b) For 3rd and 4th week : in the next week.

Prepare working capital budget (requirement) for a year for the company.

Assume one year = 52 weeks. [Dec. 2013 (20 Marks)], [June 2016 (10 Marks)]
[June 2019 (16 Marks)]

Ans.
Statement showing working capital estimation:

Particulars	Norms	Calculations	₹
Current Assets:			
Raw Material Stock	3 weeks	$\left(28,08,000 \times \frac{3}{52}\right)$	1,62,000
WIP Stock	1 week	$\left(32,76,000 \times \frac{1}{52}\right)$	63,000
Finished Goods Stock	2 weeks	$\left(37,44,000 \times \frac{2}{52}\right)$	1,44,000
Debtors (on cost)	4 weeks	$\left(28,08,000 \times \frac{4}{52}\right)$	2,16,000
Cash & Bank	Given		50,000
		(A)	6,35,000
Current Liabilities:			
Creditors	4 weeks	$\left(28,08,000 \times \frac{4}{52}\right)$	2,16,000
Outstanding Wages	2 weeks	$\left(4,68,000 \times \frac{2}{52}\right)$	18,000
Outstanding Overheads	2 weeks	$\left(4,68,000 \times \frac{2}{52}\right)$	18,000
		(B)	2,52,000
Working Capital (A) - (B)			3,83,000

Note 1: Cost Structure: (For 78,000 units)

Selling price per unit = $46,80,000/78,000 = 60$

Particulars	Per unit	Total
Raw Material	36	28,08,000
Labour	6	4,68,000
Variable Overheads	1	78,000
Fixed Overheads (excluding depreciation)		3,90,000
Total Cost		37,44,000

Note 2: Cost Structure for WIP:

Particulars	Degree of completion	₹
Raw Material	100%	28,08,000
Wages	50%	2,34,000

Particulars	Degree of completion	
Variable Overheads	50%	39,000
Fixed Overheads	50%	1,95,000
Total		32,76,000

Note 3: Calculation of cash cost of sales:

Particulars	Total
Cost of sales i.e. total cost	37,44,000
(-) Cash sales i.e. 25%	(9,36,000)
Cash cost of credit sales	28,08,000

Problem No. 3] Calculate the Net Working Capital requirement for Vertical Ltd. from the following information:

	(₹ per unit)
Raw Material	160
Direct Labour	60
Overheads	120
Total Cost	340
Profit	60
Selling Price	400

Raw material is held in stock on an average for four weeks. Materials are in process on an average for two weeks. Finished goods are in stock on an average for four weeks. Credit allowed by supplier four weeks. Credit allowed by Debtors eight weeks. Work in progress comprise 100% material cost and 50% conversion cost. Lag in payment of wages 1½ week. Time lag in payment of overhead expense, four weeks.

Other information:

Cash Sales ¼ of total sales

Cash in hand/bank ₹ 50,000

Expected level of production 1,04,000 units

One year is taken as 52 weeks.

Production is carried evenly throughout the year.

State your assumptions, if any.

[June 2017 (4 Marks)]

Ans.

Statement showing working capital estimation:

Particulars	Norms	Calculations	₹
Current Assets:			
Raw Material Stock	4 weeks	$(1,66,40,000 \times \frac{4}{52})$	12,80,000
WIP Stock	2 weeks	$(2,60,00,000 \times \frac{2}{52})$	10,00,000

Particulars	Norms	Calculations	₹
Finished Goods Stock	4 weeks	$(3,53,60,000 \times \frac{4}{52})$	27,20,000
Debtors (on credit sales)	8 weeks	$(3,12,00,000 \times \frac{8}{52})$	48,00,000
Cash & Bank	Given		50,000
Current Liabilities:		(A)	98,50,000
Creditors	4 weeks	$(1,66,40,000 \times \frac{4}{52})$	12,80,000
Outstanding Wages	1.5 weeks	$(62,40,000 \times \frac{1.5}{52})$	1,80,000
Outstanding Overheads	4 weeks	$(1,24,80,000 \times \frac{4}{52})$	9,60,000
Working Capital (A) - (B)		(B)	24,20,000
			74,30,000

Working Notes:

Note 1: Cost Structure: (1,04,000 units)

Particulars	%	Per unit	Total
Material	40%	160	1,66,40,000
Wages	20%	60	62,40,000
Overheads	20%	120	1,24,80,000
Total Cost	80%	340	3,53,60,000
Profit	20%	60	62,40,000
Sales	100%	400	4,16,00,000

Note 2: Computation of base for WIP:

Particulars	Degree of completion	₹
Material	100%	1,66,40,000
Wages	50%	31,20,000
Overheads	50%	62,40,000
Total		2,60,00,000

Note 3: Credit Sales = 4,16,00,000 - 1,04,00,000 = 3,12,00,000

Problem No. 4] The following projected figures are available for Ritu Ltd., a trading concern for the year

2017-2018:

Sales ₹ 27,00,000

Purchases ₹ 18,70,000

	1.4.2017	31.3.2018
Inventory	3,00,000	3,40,000
Debtors	3,40,000	2,60,000
Creditors	1,80,000	1,40,000

All sales and purchases are on credit and assume 365 days in a year.

Compute the cash operating cycle in days.

[Dec. 2017 (4 Marks)]

Ans.

Op. inventory + Purchase - Cl. inventory = Inventory consumed

$$3,00,000 + 18,70,000 - 3,40,000 = 18,30,000$$

Calculation of operating cycle:**Inventory Conversion Period:**

$$\frac{\text{Average Inventory}}{\text{Inventory consumed in year}} \times 365 \text{ days} = \frac{3,20,000}{18,30,000} \times 365 = 64 \text{ days}$$

Debtors Collection Period:

$$\frac{\text{Average Debtors}}{\text{Annual Sales}} \times 365 \text{ days} = \frac{3,00,000}{27,00,000} \times 365 = 41 \text{ days}$$

Creditors Payment Period:

$$\frac{\text{Creditors}}{\text{Annual Purchases}} \times 365 \text{ days} = \frac{1,60,000}{18,70,000} \times 365 = 31 \text{ days}$$

$$\text{Operating Cycle} = (64 + 41 - 31) = 74 \text{ days}$$

Problem No. 5] Compute the requirement of Working Capital of a company from the following information provided:

Sales for current year: ₹ 25,00,000

There will be increase in sales by 40% in the next year.

Gross Profit: 20% on sale

Creditor purchase: 1/4th of Cost of Goods Sold

Average collection period = 60 days

Average payment period = 60 days

Inventory Holding Period = 90 days

(On the basis of cost of goods sold)

Cash and Bank Balance 2% of Sales

For calculation 1 year to be taken $12 \times 30 = 360$ days.

[Dec. 2017 (8 Marks)]

Ans.

Sales (after 40% increase)	35,00,000
(-) Gross Profit (20% on sales)	(7,00,000)
Cost of goods sold	28,00,000

Credit purchase = $28,00,000 \times \frac{1}{4} = 7,00,000$

Statement showing working capital estimation:

Particulars	Norms	Calculations	₹
Current Assets:			
Inventory	90 days	$(28,00,000 \times \frac{90}{360})$	7,00,000
Debtors (on sales)	60 days	$(35,00,000 \times \frac{60}{360})$	5,83,333
Cash & Bank	2% of sales		70,000
			(A) 13,53,333
Current Liabilities:			
Creditors	60 days	$(7,00,000 \times \frac{60}{360})$	1,16,667
			(B) 1,16,667
Working Capital (A) - (B)			12,36,666

Problem No. 6] Management of Rose Ltd. is contemplating the next year budget, and hence required to work out the working capital requirements for the next year. The following information has been provided by the budget committee.

Estimated value for per unit of finished product:

Particulars	(₹ Per Unit)
Raw materials	60
Direct wages	30
Cash based Manufacturing & administrative overhead	20
Depreciation	10
Selling and distribution overhead	10
Total cost	130
Selling price	200

Additional information provided by the concerned committee member of budget committee is as under.

- Expected level of activity would be 60,000 units.
- Raw material cost consists of the following:

Particulars	(₹ Per Unit)
Dried milk powder	40
Coco butter	18
Vanilla essence	2

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- (3) Raw materials are purchased from different suppliers, and those suppliers are extending different credit period as indicated hereunder:

Particulars	Credit period in months
Dried milk powder	2
Coco butter	$\frac{1}{2}$
Vanilla essence	1

- (4) Product is in process for a period of $\frac{1}{2}$ month. Production process requires 100% of dried milk powder and coco butter in the beginning of the process. Vanilla essence is required at a uniform and constant rate during the process.
- (5) Direct wages and other overhead accrue at a uniform rate throughout production process.
- (6) Past trends indicate that dried milk powder is required to be stored for two months period and other materials to be stored for one month, before it would be given for the production process.
- (7) Finished goods are kept in stock for a period of one month.
- (8) It is estimated that one-fourth of total sales would be on cash basis.
- (9) The past experience also indicates that it took generally two months time to collect the receivables from the debtors.
- (10) Average time-lag in payment of all overhead is one month and $\frac{1}{2}$ month in case of labour payment.
- (11) Desired cash balance to be maintained throughout the year at the level of ₹ 1 lakh.

From the above information, you are required to determine the net working capital requirement on cash basis.
[June 2018 (16 Marks)]

Ans.

Statement showing working capital estimation:

Particulars	Norms	Calculations	₹
Current Assets:			
Raw material stock			
- Dried milk powder	2 months	$\left(24,00,000 \times \frac{2}{12}\right)$	4,00,000
- Coco butter	1 month	$\left(10,80,000 \times \frac{1}{12}\right)$	90,000
- Vanilla essence	1 month	$\left(1,20,000 \times \frac{1}{12}\right)$	10,000
WIP Stock	0.5 month	$\left(50,40,000 \times \frac{0.5}{12}\right)$	2,10,000
Finished goods stock	1 month	$\left(66,00,000 \times \frac{1}{12}\right)$	5,50,000

Particulars	Norms	Calculations	₹
Debtors (Note 3)	2 months	$(54,00,000 \times \frac{2}{12})$	9,00,000
Cash & bank balance	Given		1,00,000
Current Liabilities:			(A)
Creditors for raw material			22,60,000
- Dried milk powder	2 months	$(28,00,000 \times \frac{2}{12})$	4,66,667
- Coco butter	0.5 month	$(11,70,000 \times \frac{0.5}{12})$	48,750
- Vanilla essence	1 month	$(1,30,000 \times \frac{1}{12})$	10,833
Outstanding direct wages	0.5 month	$(18,00,000 \times \frac{0.5}{12})$	75,000
Outstanding manufacturing & administration overheads	1 month	$(12,00,000 \times \frac{1}{12})$	1,00,000
Outstanding selling and distribution overheads	1 month	$(6,00,000 \times \frac{1}{12})$	50,000
Net Working Capital (A) - (B)		(B)	7,51,250
			15,08,750

Note 1: Cash Cost Structure for the year: (60,000 units)

Particulars	Per unit	Total
Raw Material		
- Dried milk powder	40	24,00,000
- Coco butter	18	10,80,000
- Vanilla essence	2	1,20,000
Direct wages	30	18,00,000
Manufacturing & administration overheads	20	12,00,000
Cash cost of production	110	66,00,000
Selling distribution overheads	10	6,00,000
Cash cost of sales	120	72,00,000

Note 2: Cash Cost Structure for WIP:

Particulars	Degree of completion	₹
Raw Material		
- Dried milk powder	100%	24,00,000
- Coco butter	100%	10,80,000

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Particulars	Degree of completion	₹
- Vanilla essence	50%	60,000
Direct wages	50%	9,00,000
Manufacturing & administration overheads	50%	6,00,000
Total		50,40,000

Note 3: Computation of cash cost of credit sales:

Particulars	₹
Cash cost of sales	72,00,000
(-) Cash cost cash sales (72,00,000 × 25%)	(18,00,000)
Credit Sales	54,00,000

Note 4: Computation of purchase:

Opening stock + Purchase – Closing stock = Raw Material consumed

Opening stock is not given in problem so equation for calculation of purchase will be –

Raw Material consumed + Closing stock = Purchase

Dried milk powder = 24,00,000 + 4,00,000 = 28,00,000

Coco butter = 10,80,000 + 90,000 = 11,70,000

Vanilla essence = 1,20,000 + 10,000 = 1,30,000

NOTE: One can also calculate creditors for raw material by taking 'Raw Material Consumed' as base instead of 'Purchase' as calculated above.

Problem No. 7] From the following information provided, you are required to calculate the working capital requirement for the company. Present your calculation in a Tabular Form.

(a) Cost per unit:

	(₹)
Raw Material	208
Direct Labour	78
Overheads	156
Total Cost	442
Profit	78
Selling Price per unit	520

(b)

- (i) Raw material will be in stock on an average for one month holding.
- (ii) Work in Process will comprise of 100% of material, 50% of wages and overheads for average of half a month.
- (iii) Finished goods will be in stock on average of one month.
- (iv) Credit allowed by suppliers of Raw Material is one month.
- (v) Time lag in payment of wages is 1½ weeks.
- (vi) Time lag in payment of overheads is 1 month.
- (vii) Time lag in payment from Debtors is 2 months.
- (viii) Cash Balance is to be maintained at a minimum of ₹ 4,80,000.

- (c) Level of Activity: Production of 70,000 units per annum. It is to be assumed that production is carried on evenly throughout the year and wages and overheads accrue similarly.
- (d) Calculation to be based on 30 days a month and 52 weeks in a year.
- (e) Finished goods will be valued at Total Cost. [Dec. 2018 (16 Marks)]

Ans.

Statement showing working capital estimation:

Particulars	Norms	Calculations	₹
Current Assets:			
Raw Material Stock	1 month	$(1,45,60,000 \times \frac{1}{12})$	12,13,333
WIP Stock	0.5 month	$(2,27,50,000 \times \frac{0.5}{12})$	9,47,917
Finished Goods Stock	1 month	$(3,09,40,000 \times \frac{1}{12})$	25,78,333
Debtors (on sales)	2 months	$(3,64,00,000 \times \frac{2}{12})$	60,66,667
Cash & Bank	Given		4,80,000
		(A)	1,12,86,250
Current Liabilities:			
Creditors	1 month	$(1,45,60,000 \times \frac{1}{12})$	12,13,333
Outstanding Wages	1.5 week	$(54,60,000 \times \frac{1.5}{52})$	1,57,500
Outstanding Overheads	1 month	$(1,09,20,000 \times \frac{1}{12})$	9,10,000
		(B)	22,80,833
Working Capital (A) - (B)			90,05,417

Working Notes:

Note 1: Cost Structure for the year: (For 70,000 units)

Particulars	Per unit	Total
Material	208	1,45,60,000
Direct Labour	78	54,60,000
Overheads	156	1,09,20,000
Total Cost	442	3,09,40,000
Profit	78	54,60,000
Sales	520	3,64,00,000

Note 2: Cost Structure for WIP:

Particulars	Degree of completion	₹
Material	100%	1,45,60,000
Labour	50%	27,30,000
Overheads	50%	54,60,000
Total		2,27,50,000

Problem No. 8] Gayatri Textiles Limited is a readymade garment manufacturing company. Its production cycle indicates that materials are introduced in the beginning of the production phase; wages and overhead accrue evenly throughout the period of cycle. The following figures for the 12 months ending 31st March, 2019 are given below:

Production of shirts	54,000 units
Selling price per unit	₹200
Duration of the production cycle	1 month
Raw material inventory held	2 month's consumption
Finished goods stock held	1 month

Credit allowed to debtors is 1.5 months and credit allowed by creditors is 1 month. Wages and overheads are paid in the next month following the month of accrual. In the work-in-progress 50% of wage and overheads are supposed to be conversion costs. The ratios of cost to sales price are — raw materials 60%, direct wages 10% and overheads 20%.

Cash is to be held to the extent of 40% of current liabilities and an additional safety margin of 15% on gross working capital will be maintained. Calculate amount of working capital required for the company. [Dec. 2020 (4 Marks)]

Ans.

Statement showing working capital estimation:

Particulars	Norms	Calculations	₹
Current Assets:			
Raw Material Stock	2 months	$(64,80,000 \times \frac{2}{12})$	10,80,000
WIP Stock	1 month	$(81,00,000 \times \frac{1}{12})$	6,75,000
Finished Goods Stock	1 month	$(97,20,000 \times \frac{1}{12})$	8,10,000
Debtors (on sales)	1.5 months	$(1,08,00,000 \times \frac{1.5}{12})$	13,50,000
Cash & Bank	40% of current liabilities		3,24,000
		(A)	42,39,000

Particulars	Norms	Calculations	₹
Current Liabilities:			
Creditors	1 month	$(64,80,000 \times \frac{1}{12})$	5,40,000
Outstanding Wages	1 month	$(10,80,000 \times \frac{1}{12})$	90,000
Outstanding Overheads	1 month	$(21,60,000 \times \frac{1}{12})$	1,80,000
		(B)	8,10,000
Gross working capital			34,29,000
Safety Margin 15%			5,14,350
Net Working Capital (A) - (B)			39,43,350

Note 1: Cost Structure for the year: (For 54,000 units)

Particulars	%	Per unit	Total
Raw Material	60%	120	64,80,000
Direct Wages	10%	20	10,80,000
Overheads	20%	40	21,60,000
Total Cost	90%	180	97,20,000
Profit	10%	20	10,80,000
Sales	100%	200	1,08,00,000

Note 2: Cost Structure for WIP:

Particulars	Degree of completion	₹
Raw Material	100%	64,80,000
Direct Wages	50%	5,40,000
Overheads	50%	10,80,000
Total		81,00,000

Problem No. 9] Ice Decor Ltd. sells goods at a uniform rate of gross profit of 20% on sales including depreciation as part of cost of production. Its annual figures for the current year are as under:

	₹
Sales (at 2 months credit)	24,00,000
Materials consumed (suppliers credit 2 months)	6,00,000
Wages paid (monthly at the beginning of the subsequent month)	4,80,000
Manufacturing expenses (cash expenses are paid - one month in arrear)	6,00,000
Administration expenses (cash expenses are paid - one month in arrear)	1,50,000
Sales promotion expenses (paid quarterly in advance)	75,000

The company keeps one month stock each of raw materials and finished goods. A minimum cash balance of ₹ 80,000 is always kept. The company wants to adopt a 10% safety margin in the maintenance of working capital. The company has no work-in-progress.

Find out the requirement of working capital of the company on *cash cost basis*.
 [June 2021 (16 Marks)], [Dec. 2010 (12 Marks)], [June 2012 (20 Marks)]

Ans.

Statement showing working capital estimation on cash cost basis:

Particulars	Norms	Calculations	₹
Current Assets:			
Raw Material Stock	1 month	$(6,00,000 \times \frac{1}{12})$	50,000
Finished Goods Stock	1 month	$(16,80,000 \times \frac{1}{12})$	1,40,000
Debtors	2 months	$(19,05,000 \times \frac{2}{12})$	3,17,500
Prepaid sales promotion exp.	1 quarter	$(75,000 \times \frac{1}{4})$	18,750
Cash & Bank	Given		80,000
		(A)	6,06,250
Current Liabilities:			
Creditors	2 months	$(6,00,000 \times \frac{2}{12})$	1,00,000
Outstanding wages	1 month	$(4,80,000 \times \frac{1}{12})$	40,000
Outstanding manufacturing exp.	1 month	$(6,00,000 \times \frac{1}{12})$	50,000
Outstanding Admin. exp.	1 month	$(1,50,000 \times \frac{1}{12})$	12,500
		(B)	2,02,500
Working Capital (A) - (B)			4,03,750

Note 1: Computation of cost of goods sold:

Particulars	₹
Sales	24,00,000
(-) Gross profit @ 20%	(4,80,000)
Cost of production	19,20,000

Above calculated cost of production contains depreciation; hence following computation has to be made to find out cash cost of production and depreciation.

Note 2: Cost Structure:

Particulars	Total
Material Consumption	6,00,000
Wages	4,80,000
Cash manufacturing expenses	6,00,000
Cash cost of production	16,80,000
Depreciation (Bal. Fig.)	2,40,000
Cost of production	19,20,000

Note 3: Computation of cash cost of sales:

Particulars	₹
Cash cost of production	16,80,000
Administrative expenses	1,50,000
Sales promotion expenses	75,000
Cash cost of sales	19,05,000

Problem No. 10] Fortune Ltd. plans to manufacture and sell 400 units of electronic appliances per month at a price of ₹ 600 each. The ratios of cost to selling price are as follows:

	(% of selling price)
Raw materials	30%
Packing material	10%
Direct labour	15%
Direct expenses	5%

Fixed overhead are estimated at ₹ 4,32,000 per annum.

The following norms are maintained for inventory management:

Raw materials	30 days
Packing materials	15 days
Finished goods	200 units
Work-in-progress	7 days

Other particulars are given below:

- Credit sales represent 80% of total sales and dealers enjoy 30 working days credit. Balance 20% are cash sales.
- Creditors allow 21 working days credit for payment.
- Lag in payment of overhead and expenses is 15 working days.
- Cash requirements to be 12% of net working capital.
- Working days in year are taken as 300 days for budget year.

Calculate the net working capital required and the maximum permissible bank finance under second method of financing as per Tandon Committee norms.

[Dec. 2021 (16 Marks)]

Ans.

Statement showing working capital estimation:

Particulars	Norms	Calculations	₹
Current Assets:			
Raw material stock	30 days	$(8,64,000 \times \frac{30}{300})$	86,400
Packing materials	15 days	$(2,88,000 \times \frac{15}{300})$	14,400
WIP Stock	7 days	$(13,68,000 \times \frac{7}{300})$	31,920
Finished goods stock	200 units	$(21,60,000 \times \frac{200 \text{ units}}{4,800 \text{ units}})$	90,000
Debtors (on sales)	30 days	$(23,04,000 \times \frac{30}{300})$	2,30,400
		(A)	4,53,120
Current Liabilities:			
Creditors for raw material	21 days	$(8,64,000 \times \frac{21}{300})$	60,480
Creditors for packing material	21 days	$(2,88,000 \times \frac{21}{300})$	20,160
Outstanding direct expenses	15 days	$(1,44,000 \times \frac{15}{300})$	7,200
Outstanding overheads	15 days	$(4,32,000 \times \frac{15}{300})$	21,600
		(B)	1,09,440
Net Working Capital (A) - (B)			3,43,680
Cash (12% of working capital)			41,242
Total Working Capital			3,84,922

Note 1: Cost Structure for the year: (400 × 12 = 4,800 units)

Particulars	%	Per unit	Total
Raw Material	30%	180	8,64,000
Packing Material	10%	60	2,88,000
Direct Labour	15%	90	4,32,000
Direct Expenses	5%	30	1,44,000

Particulars	%	Per unit	Total
Fixed Overheads			4,32,000
Total Cost			21,60,000
Profit (Bal. Fig.)			7,20,000
Sales	100%	600	28,80,000

Note 2: Cost Structure for WIP:

Particulars	Degree of completion	₹
Raw Material	100%	8,64,000
Direct Labour	50%	2,16,000
Direct Expenses	50%	72,000
Fixed Overheads	50%	2,16,000
Total		13,68,000

Note 3: Computation of credit sales:

Particulars	₹
Total Sales	28,80,000
(-) Cash Sales (28,80,000 × 20%)	(5,76,000)
Credit Sales	23,04,000

Maximum permissible bank borrowing as per 1st and 2nd method of lending under the Tandon Committee norms:

$$\begin{aligned}
 \text{Method 2:} &= [75\% \text{ of Current Assets} - \text{Current Liabilities}] \\
 &= [(75\% \times 4,53,120) - 1,09,440] \\
 &= 2,30,400
 \end{aligned}$$

UNIT II : MANAGEMENT OF CASH

THEORETICAL QUESTIONS

Q. 17. Most businesses need cash funds to meet contingencies. Comment.
[Dec. 2009 (5 Marks)]

Ans.

Contingency Motive: This motive of holding cash takes into account the element of uncertainty associated with any form of business. The uncertainty can result in prolongation of the working capital operating cycle or even its disruption.

It is possible that cost of raw materials or components might go up or the time taken for conversion of raw materials into finished goods might increase. For such contingencies, some amount of cash is kept by every firm. The motive of holding cash for contingencies is based on the need to maintain sufficient cash to act as a cushion to buffer against unexpected events.

One never knows about the happening of natural calamities or sudden increase in cost of raw materials or any other factor such as strike, lock-out etc. Such events may seriously interrupt even the best planned financial plans and thus temporarily make the cash budget ineffective and non-existent.

Therefore, the business should maintain larger cash balance than required for day to day transactions in order to avoid unforeseen situation arising because of insufficient cash.

Q. 18. Write a short note on: Important motives to hold cash.

[Dec. 2010 (5 Marks)]

Or

Distinguish between: 'Speculative motive of holding cash' and 'contingency motive of holding cash'.

[June 2016 (5 Marks)]

Or

Describe the motives of holding cash.

[June 2021 (4 Marks)]

Ans.

At the basic level, a firm has three motives for holding cash. These are as under:

(a) Transactional Motive: This is the most essential motive for holding cash because cash is the medium through which all the transactions of the firm are carried out. Some examples of transactions of a manufacturing firm are given below:

- ◆ Purchase of capital goods like plant and machinery
- ◆ Purchase of raw material and components
- ◆ Payment of rent and wages
- ◆ Payment for utilities like water, power and telephone
- ◆ Payment for service like freight and courier

These transactions are paid from the cash pool or cash reservoir which is all the time being supplemented by inflows. These inflows are of the following kinds:

- ◆ Capital inflows from promoters capital and borrowed funds
- ◆ Sales proceeds of finished goods
- ◆ Capital gains from investments

The size of the cash pool depends upon the overall operations of the firm. Ideally, for transaction purposes, the working capital inflows should be more than the working capital outflows at any point of time. The non-working capital inflows should be utilized for similar outflows such as purchase of fixed assets together with the surplus of working capital inflows.

(b) Speculative Motive: Since cash is the most liquid current asset, it has the maximum potential of value addition to a firm's business. The value addition can come in two forms. First, as the originating and terminal point of the operating cycle, cash is invaluable. But cash has an opportunity cost also and if cash is kept idle, it becomes a liability rather than an asset. Therefore, efficient firms seek to deploy surplus cash in short term investments to get better returns. It is here that the second form of value addition from cash can be had. Since this deployment of cash needs to be done

- skillfully, not all the firms hold cash for speculative motive. Further the amount of cash held for speculative motive should not cause any strain upon the operating cycle.
- (c) **Contingency Motive:** This motive of holding cash takes into account the element of uncertainty associated with any form of business. The uncertainty can result in prolongation of the working capital operating cycle or even its disruption. It is possible that cost of raw materials or components might go up or the time taken for conversion of raw materials into finished goods might increase. For such contingencies, some amount of cash is kept by every firm.

Q. 19. Write a short note on: Strategy for effective cash management.

Or

The strategy for effective cash management in any firm has a core component of operating cycle. Comment. [June 2012 (5 Marks)]

Ans. The strategy for effective cash management in any firm has a core component of ensuring uninterrupted supply of cash to the operating cycle. This cash is ideally generated from the cycle itself but under certain circumstances infusion of cash from outside the cycle also takes place. Examples of such circumstances are:

- when the firm has been newly set up and the cycle has yet to commence;
- when due to disruption in the cycle, cash gets stuck in other current assets and outside cash infusion in the form of promoters lenders' contribution is done.

Essential elements of a successful cash management strategy:

- (1) Realistic cash forecasting:** Realistic cash forecasting mean that a cash forecast for the entire next year should be prepared at its commencement. The cash forecast has two parts-one is the forecast of cash flows from the operating cycle and the second part is the capital flows. The first part originates from the sales forecast for the year while the second part originates from the capital budget. The surplus of cash generated from the operating cycle is called the internal accruals of the firm and it is used to fund the capital outlays together with bank borrowings. For realistic cash forecast, the sales projections and capital budget have to be drawn up after extensive deliberations in the management committee of the firm. Such a forecast carries a cushion for normal contingencies like sudden spurt or shrinkage in demand for which mid-term modifications in the forecast are made. Involvement of operational level people, both from production and sales areas, is essential for realistic cash forecast.
- (2) Speeding up Collections:** After the cash forecast has been prepared, the firm should ensure that in day to day operations cash (including cheques) should be collected speedily. Towards this end, a schedule of receivables should be prepared and kept updated. Before due date of each payment, the debtor should be reminded for it. When the cheques are received on due dates, these should be credited to the bank account expeditiously. For a multi-locational firm, arrangements should be made with the bank for on-line transfer of funds to the main account. Similarly facilities like drop boxes can be provided by firms having a large user base whereby customers can drop their payments in boxes placed at vantage locations.
- (3) Spreading out Payments:** Simultaneously with speeding up collection, the firm should spread out payments as far as possible. It means that if credit period is available in some payments, it should be utilized fully. Bunching of payments

should be avoided. For outstation customers, arrangement can be made with the bank for making at par payment.

Q. 20. Efficient cash pooling structures are keys to efficient and effective liquidity management. [June 2018 (5 Marks)]

Ans. Efficient cash pooling structures are keys to efficient and effective liquidity management. A cash pool is a structure which allows the balances on different bank accounts of a company or a group of companies to be treated as one single balance. It allows a company to combine the balances, both positive and negative, of all the accounts that are in the pool. Cash pooling provides a group with subsidiaries with a number of potential benefits like control over cash flows, funding benefits, investment opportunities, minimization of interest charge, reduction in payment costs etc.

Every investment has a cost to the company even the shares tapped from the shareholders. Deposits are tapped in exchange of payment of interest. Borrowing has cost of payment of interest to creditors. So every fund has dividend/interest payment risks for the banks/company. So, if funds tapped are not properly utilized, the banks/company may suffer loss. Idle cash balance in hand has no yield. On the other hand, if sufficient cash balance is not maintained, then the probability of technical insolvency may arise.

PROBLEMS & SOLUTIONS

Problem No. 11] Following facts are available for Astro Ltd.:

- (i) Cash turnover rate is 5
- (ii) Annual cash outflow is ₹ 1,75,000
- (iii) Accounts payable can be stretched by 12 days.

What would be the effect of stretching accounts payable on the minimum operating cash requirements? If the firm can earn 10% on its investments, what would be the savings on cost?

(Assume 360 days in a year.)

[Dec. 2009 (6 Marks)]

Ans.

Present cash cycle = $360 \text{ days} / 5 = 72 \text{ days}$

Proposed cash cycle when accounts payable stretched by 12 days = $72 \text{ days} - 12 \text{ days} = 60 \text{ days}$

Proposed cash turnover rate would be = $360 \text{ days} / 60 \text{ days} = 6$

Minimum operating cash requirement:

Present = $₹ 1,75,000 / 5 = ₹ 35,000$

Proposed = $₹ 1,75,000 / 6 = ₹ 29,167$

Reduction in investment = $₹ 35,000 - ₹ 29,167 = ₹ 5,833$

Therefore, Savings in cost = $₹ 5,833 \times 10\% = ₹ 583.30$

Problem No. 12] Following results are expected by XYZ Ltd. by quarters next year:
(₹ in '000)

Quarter	1	2	3	4
Sales	7,500	10,500	18,000	10,500
Cash Payments:				
Production costs	7,000	10,000	8,000	8,500
Selling, admin. and other costs	1,000	2,000	2,900	1,600
Purchases of plant and other fixed assets	100	1,000	2,100	2,100

Debtors at the end of a quarter are one-third of sales for the quarter. The opening balance of debtors is ₹ 30,00,000. Cash on hand at the beginning of the year is ₹ 6,50,000 and the desired minimum balance is ₹ 5,00,000. Borrowings are made at the beginning of quarters in which the need will occur in multiples of ₹ 10,000 and are repaid at the end of quarters. Interest charges may be ignored.

You are required to prepare:

- A cash budget by quarters for the year, and
- State the amount of loan outstanding at the end of the year.

[Dec. 2021 (8 Marks)]

Ans.

Cash Budget

(₹ in '000)

Quarter	1	2	3	4
Opening cash balance (A)	650	550	500	500
Receipts:				
- Cash sales	5,000	7,000	12,000	7,000
- Cash received form debtors	3,000	2,500	3,500	6,000
Total receipts (B)	8,000	9,500	15,500	13,000
Payments:				
- Production costs	7,000	10,000	8,000	8,500
- Selling, admin. and other costs	1,000	2,000	2,900	1,600
- Purchases of plant and other fixed assets	100	1,000	2,100	2,100
Total payments (C)	8,100	13,000	13,000	12,200
Closing cash balance (A) + (B) - (C)	550	(2,950)	3,000	1,300
Borrowings taken or repaid	-	3,450	(2,500)	(800)
Required minimum balance	550	500	500	500

UNIT-III : INVENTORY MANAGEMENT

THEORETICAL QUESTIONS

Q. 21. In addition to transaction motive, more motives force corporate to hold inventory. Comment.
[June 2009 (5 Marks)]

Ans. There are three possible motives for holding inventory, such as transaction motive, precautionary motives and speculative motive.

- (1) **Transaction motive:** Transaction motive of holding inventory takes into consideration the view that inventory level needs to be maintained in the right quantum to ensure proper functioning of business.
- (2) **Precautionary motive:** Precautionary motive provides that the level of inventory should also take into account the aspect of that purchases which may prove to be time consuming in some cases and hence ample inventory should be maintained to avoid stock-out situation.
- (3) **Speculative motive:** Speculative motive talks about availing of discount and concessions associated with bulk purchases.

Thus, in addition to transaction motive, corporate are influenced by precautionary motive and speculative motives to hold inventory.

Q. 22. Discuss the ABC analysis as a technique of inventory control.
[June 2010 (5 Marks)], [Dec. 2012 (5 Marks)]

Ans. ABC analysis is a type of analysis of material dividing in three groups called A-group items, B-Group items and C-group items for the purpose of exercising control over materials. Manufacturing concerns find it useful to divide materials into three categories. Under this technique, the items in inventory are classified according to value of usage.

ABC Analysis of inventory items are represented in the following table:

Category	% of items	% of value
A	15%	80%
B	35%	15%
C	50%	5%
	100%	100%

Classification into various groups:

A-group:	It contains inventory items, which are expensive or used in massive quantities. Thus, they low in quantity but high in value. (70% to 80% by value)
B-group:	It contains inventory items, which are neither very expensive nor very cheap. Moreover, they are used in moderate quantities. (15% to 20% by value)
C-group:	It contains a relatively large number of items. But they are either very inexpensive items or used in very small quantities so that they do constitute small percentage of the total value of inventories. (5% to 10% by value)

Q. 23. It is not always necessary that inventory is held for smooth manufacturing and sales operations. Comment.
[Dec. 2011 (5 Marks)]

Ans. Inventory control is the core of material management. The need and important of inventory varies in direct proportion to the idle time cost of men and machinery and the urgency of requirements.

It is highly uneconomical to keep men and machines waiting. Hence firms must carry inventories. Without proper control, inventories have a tendency to grow beyond economic limits. Funds are tied up unnecessarily in surplus stores and stocks, productive operations are stalled, and finances of the plant are severely strained. Lack of control over inventory

also leads to excessive consumption and wastage as operative are liable to become careless with irrational supply of materials.

Holding of inventory does not come free of cost, as it requires investment to build up inventory. Keeping huge inventory will require high cash outlay and also high carrying cost, while maintaining less stock may lead to less order and customer dissatisfaction.

However, it is not always necessary that inventory is held for smooth manufacturing and sales operations. The concept of JIT advocates the philosophy of placing purchase order just in time before sales orders are received and is proven method of reducing handling and carrying cost.

PROBLEMS & SOLUTIONS

Problem No. 9] In Happy Ltd., for one of the A-class items, the following data are available:

Annual demand	: 1,000 units
Ordering cost	: ₹ 400
Holding cost	: 40%
Cost per unit	: ₹ 20

Following three strategies are under consideration for the procurement:

- Place 4 orders of equal size every year.
- Place an order for 500 units at a time and avail a discount of 10% on the cost of items.
- Follow EOQ policy.

Which of the above strategies do you recommend? Justify your answer.

[Dec. 2014 (5 Marks)]

Ans.

$$EOQ = \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Ordering cost}}{\text{Carrying cost p. u. p. a}}}$$

$$= \sqrt{\frac{2 \times 1,000 \times 400}{20 \times 40\%}}$$

$$= \sqrt{\frac{8,00,000}{8}}$$

$$EOQ = 316.23 \text{ say } 316 \text{ units}$$

Total cost at EOQ policy:

		₹
Material cost	(1,000 × 20)	20,000
(+) Ordering cost	$\left[\frac{1,000}{316} \times 400 \right]$	1,266

	₹
(+) Carrying cost $\left[\frac{316}{2} \times 20 \times 40\% \right]$	1,264
	22,530

Total cost when 4 orders of equal size are placed every year:

	₹
Material cost (1,000 × 20)	20,000
(+) Ordering cost $\left[\frac{1,000}{250} \times 400 \right]$	1,600
(+) Carrying cost $\left[\frac{250}{2} \times 20 \times 40\% \right]$	1,000
	22,600

Total cost when order for 500 units at a time is placed to avail a discount of 10%:

	₹
Material cost (1,000 × 18)	18,000
(+) Ordering cost $\left[\frac{1,000}{500} \times 400 \right]$	800
(+) Carrying cost $\left[\frac{500}{2} \times 20 \times 40\% \right]$	1,800
	20,600

Analysis: Total cost is less when order for 500 units at a time is placed to avail a discount of 10%.

Problem No. 14] Bharati Fiber Products produces a special fiber at the rate of 5,000 meters per hour. The fiber is used in other products made by the company at the rate of 20,000 meters per day. Cost of fiber is ₹ 5 per meter. The inventory carrying cost is 25% and set-up costs are ₹ 4,050.

Compute the optimum number of cycles required in a year for the manufacture of this special fiber. Working hours per day are 8 hours. Assume 365 days in a year.
[June 2015 (8 Marks)]

Ans.

Annual requirement = 20,000 × 365 = 73,00,000.

Annual carrying cost:

Production rate of fiber = 5,000 meters per hour

Usage rate = $\frac{20,000}{8} = 2,500$ meters per hour

Carrying cost p. u. = 5 × 25% = 1.25

Annual carrying cost p. u. = $\frac{1.25}{5,000} \times (5,000 - 2,500) = 0.625$

$$EOQ = \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Set-up cost}}{\text{Carrying cost p. u. p. a}}}$$

$$= \sqrt{\frac{2 \times 73,00,000 \times 4,050}{0.625}}$$

$$EOQ = 3,07,584.13 \text{ say } 3,07,584$$

$$\text{Optimum cycles} = \frac{73,00,000}{3,07,584} = 23.73 \text{ say } 24 \text{ cycles}$$

Problem No. 15] Sona Ltd. manufactures a product which has a weekly demand of 2,500 units. The product requires 5 kg. of material for every finished unit of product. Material is purchased at ₹104 per unit. The ordering cost is ₹200 per order and the carrying cost is 10% per annum.

Answer the following:

- (i) Calculate economic order quantity. Assume 52 weeks in a year.
- (ii) Should the company accept an offer of 3% discount by the supplier who wants to supply the annual requirement of the material in five equal instalments?

[June 2015 (8 Marks)], [June 2016 (8 Marks)]

Ans.

Weekly demand = 2,500 units; Annual demand = 1,30,000 units

Calculation of annual consumption:

For 1 finished unit - 5 kg.

For 1,30,000 units - ?

$$\frac{1,30,000 \times 5}{1} = 6,50,000 \text{ kg.}$$

$$EOQ = \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Ordering cost}}{\text{Carrying cost p. u. p. a}}}$$

$$= \sqrt{\frac{2 \times 6,50,000 \times 200}{104 \times 10\%}}$$

$$EOQ = 5,000 \text{ kg.}$$

Total cost at EOQ policy:

	₹
Material cost (6,50,000 × 104)	6,76,00,000
(+) Ordering cost $\left[\frac{6,50,000}{5,000} \times 200 \right]$	26,000

	₹
(+) Carrying cost $\left[\frac{1,581}{2} \times 104 \times 10\% \right]$	26,000
	6,76,52,000

Total cost when 3% discount is offered by supplier for supply of material in 5 equal instalments:

	₹
Material cost $(6,50,000 \times 100.88)$	6,55,72,000
(+) Ordering cost $\left[\frac{6,50,000}{1,30,000} \times 200 \right]$	1,000
(+) Carrying cost $\left[\frac{1,30,000}{2} \times 100.88 \times 10\% \right]$	6,55,720
	6,62,28,720

Analysis: Supplier offer can be accepted as it will save ₹14,23,280.

Problem No. 16] A company is considering selective inventory control using the following data:

Item No.	Units	Unit Cost (₹)
1	6,000	4.00
2	61,200	0.05
3	16,800	2.10
4	3,000	6.00
5	55,800	0.20
6	22,680	0.50
7	26,640	0.65
8	14,760	0.40
9	20,520	0.40
10	90,000	0.10
11	29,940	0.30
12	24,660	0.50

Arrange the data for presentation to management for implementation of ABC technique of inventory management. [June 2016 (4 Marks)]

Ans.

Item No.	Units	Unit Cost (₹)	Total cost	Total cost in %	Classification
1	6,000	4.00	24,000	14.58%	A
2	61,200	0.05	3,060	1.86%	C
3	16,800	2.10	35,280	21.44%	A

Item No.	Units	Unit Cost (₹)	Total cost	Total cost in %	Classification
4	3,000	6.00	18,000	10.94%	A
5	55,800	0.20	11,160	6.78%	A
6	22,680	0.50	11,340	6.89%	A
7	26,640	0.65	17,316	10.52%	A
8	14,760	0.40	5,904	3.59%	C
9	20,520	0.40	8,208	4.99%	B
10	90,000	0.10	9,000	5.47%	B
11	29,940	0.30	8,982	5.46%	B
12	24,660	0.50	12,330	7.49%	A
			1,64,580	100%	

Summary of classification:

Classification	Item	Total Cost ₹	Total Cost in %
A	1, 3, 4, 5, 6, 7, 12	1,29,426	78.64%
B	9, 10, 11	26,190	15.91%
C	2, 8	8,964	5.45%
		1,64,580	100.00%

Problem No. 17] Product-Y is sold for ₹20 per unit. The demand for the product is at a constant rate of 2,000 units per month. The cost price per unit is ₹10. The ordering cost is ₹1.20 per order and the carrying cost is 10% per annum.

Calculate EOQ and number of orders needed per year. [Dec. 2016 (4 Marks)]

Ans.

$$EOQ = \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Ordering cost}}{\text{Carrying cost p. u. p. a}}}$$

$$= \sqrt{\frac{2 \times 24,000 \times 1.2}{10 \times 10\%}}$$

$$= \sqrt{\frac{57,600}{1}}$$

$$EOQ = 240$$

$$\text{No. of orders} = \frac{\text{Annual consumption}}{\text{Re-ordering/EOQ qty.}} = \frac{24,000}{240} = 100 \text{ orders}$$

Problem No. 18] Calculate the Minimum stock level, Maximum stock level, Reordering level and Average stock level from the following information:

- (1) Minimum Consumption = 100 units per day
- (2) Maximum Consumption = 150 units per day
- (3) Normal Consumption = 120 units per day

(4) Re-order period = 10 (min) - 15 (max) units per day

(5) Re-order quantity = 1,500 units per day

(6) Normal re-order period = 12 days

[June 2017 (4 Marks)]

Ans.

Calculation of Re-order Level:

(Maximum usage × Maximum delivery period)

(150 units × 15 days)

2,250 units

Calculation of Minimum Level:

Re-order level - (Normal usage × Normal delivery period)

2,250 units - (120 units × 12 days)

810 units

Calculation of Maximum Level:

(Re-order level + Re-ordering qty.) - (Minimum usage × Minimum delivery period)

(2,250 units + 1,500 units) - (100 units × 10 days)

2,750 units

Calculation of Maximum Level:

$\frac{\text{Minimum level} + \text{Maximum level}}{2}$

$(810 \text{ units} + 2,750 \text{ units}) / 2$

1,780 units

OR

Average Level = Minimum level + $\frac{1}{2}$ Reordering quantity

= 810 units + $\frac{1}{2}$ 1,500 units

= 1,560 units

Problem No. 19] In Delhi Ltd. the following data is available for one of the A class items of inventory:

Annual usage 1,000 units

Ordering cost ₹ 400

Carrying cost 40%

Unit cost ₹ 20

Which of the following strategies being considered would you advise? Give detailed working in support of your Ans.

(i) Place 4 orders of equal size every year.

(ii) Place an order for 500 units at a time and avail a discount of 10% on the cost of items.

[Dec. 2017 (4 Marks)]

Ans.

$$EOQ = \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Ordering cost}}{\text{Carrying cost p. u. p. a}}}$$

$$= \sqrt{\frac{2 \times 1,000 \times ₹400}{₹20 \times 40\%}}$$

$$= \sqrt{\frac{8,00,000}{8}}$$

$$EOQ = 316.22 \text{ say } 316 \text{ units}$$

Total cost at EOQ level purchase:

Material Cost	(1,000 units × ₹ 20)	₹ 20,000
(+) Ordering Cost	$\left[\frac{1,000 \text{ units}}{316 \text{ units}} \times ₹ 400 \right]$	1,266
(+) Carrying Cost	$\left[\frac{316 \text{ units}}{2} \times ₹ 8 \right]$	1,264
		<u>22,530</u>

Total cost when purchased in 4 orders of equal size every year i.e. in lot of 250 units:

Material Cost	(1,000 units × ₹ 20)	₹ 20,000
(+) Ordering Cost	$\left[\frac{1,000 \text{ units}}{250 \text{ units}} \times ₹ 400 \right]$	1,600
(+) Carrying Cost	$\left[\frac{250 \text{ units}}{2} \times ₹ 8 \right]$	1,000
		<u>22,600</u>

Total cost when purchased in lot of 500 units at 10% discount:

Material Cost	(1,000 units × ₹ 18)	₹ 18,000
(+) Ordering Cost	$\left[\frac{1,000 \text{ units}}{500 \text{ units}} \times ₹ 400 \right]$	800
(+) Carrying Cost	$\left[\frac{500 \text{ units}}{2} \times ₹ 7.2 \right]$	1,800
		<u>20,600</u>

Analysis: As total cost is minimum when purchased in lot of 500 units at 10% discount, this strategy is recommended.

Problem No. 20] Kopla Ltd. manufactures a product X. To produce one unit of finished product, 4 kg of raw material is required. The sales department has estimated an annual demand of 5,00,000 units. Stock position at the beginning of the year is as below:

Product X 20,000 units

Raw material 40,000 kg

To place an order the company has to spent ₹ 1,500. The company is financing its working capital using a bank cash credit @ 12%.

Product X is sold at ₹ 1,040 per unit, material is purchased at ₹ 150 per kg.

Compute:

- (a) Economic Order Quantity
(b) Number of orders placed in a year.

[Dec. 2018 (4 Marks)]

Ans.

Annual demand = 5,00,000 units

Opening units = 20,000 units

Units required to be produced = 4,80,000 units

Calculation of annual consumption:

For 1 finished unit - 4 kg

For 4,80,000 units - ?

$$\frac{4,80,000 \times 4}{1} = 19,20,000 \text{ kg}$$

Opening stock of raw material = 40,000 kg

19,20,000 kg - 40,000 kg = 18,80,000

Calculation of EOQ:

$$\begin{aligned} \text{EOQ} &= \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Ordering cost}}{\text{Carrying cost p. u. p. a}}} \\ &= \sqrt{\frac{2 \times 18,80,000 \times 1,500}{150 \times 12\%}} \end{aligned}$$

EOQ = 17,701 kg

Calculation of No. of orders:

$$\frac{\text{Annual consumption}}{\text{Re-ordering or EOQ qty}} = \frac{18,80,000}{17,701} = 106 \text{ orders}$$

Problem No. 21] A firm purchases 4,000 units of a particular item per annum at ₹ 40 per unit. Ordering cost is ₹ 100 per order and inventory carrying cost is 12.5%.

Required

- (a) Determine optimal order quantity.
(b) If a 3% discount is offered by the supplier for purchase in lot of 1,000 or more, should the firm accept the offer?

[June 2019 (4 Marks)]

Ans.

$$EOQ = \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Ordering cost}}{\text{Carrying cost p. u. p. a}}}$$

$$= \sqrt{\frac{2 \times 4,000 \times 100}{40 \times 12.5\%}}$$

$$= \sqrt{\frac{8,00,000}{5}}$$

$$EOQ = 400$$

Total cost at EOQ policy:

	₹
Material cost (4,000 × 40)	1,60,000
(+) Ordering cost $\left[\frac{4,000}{400} \times 100 \right]$	1,000
(+) Carrying cost $\left[\frac{400}{2} \times 40 \times 12.5\% \right]$	1,000
	1,62,000

Total cost when 3% discount is offered by supplier for purchase in lot of 1,000:

	₹
Material cost (4,000 × 38.8)	1,55,200
(+) Ordering cost $\left[\frac{4,000}{1,000} \times 100 \right]$	400
(+) Carrying cost $\left[\frac{1,000}{2} \times 38.8 \times 12.5\% \right]$	2,425
	1,58,025

Analysis: Offer of Supplier can be accepted as it will save ₹ 3,975.

Problem No. 22] XYZ Ltd. has an annual requirement for a certain material of 500 tonnes. The ordering cost per order is ₹ 6,250 and the stock holding cost is estimated at 25% of the material cost per annum.

You are required to:

- (i) Compute EOQ if the price per tonne is ₹ 5,250.
- (ii) Calculate the total number of orders to be placed per year.

[Dec. 2020 (4 Marks)]

Ans.

$$\begin{aligned}
 \text{EOQ} &= \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Ordering cost}}{\text{Carrying cost p. u. p. a}}} \\
 &= \sqrt{\frac{2 \times 500 \times 6,250}{5,250 \times 25\%}} \\
 &= \sqrt{\frac{62,50,000}{1,312.5}}
 \end{aligned}$$

$$\text{EOQ} = 69$$

Problem No. 23] The following information is available for a component in use at TQR Ltd.:

Normal usage	150 units per month
Maximum usage	250 units per month
Minimum usage	50 units per month
Economic Order Quantity (EOQ)	1,000 units
Lead time for orders	1 to 2 months

Calculate following parameters for the component:

- (i) Re-order level
- (ii) Maximum level
- (iii) Minimum level
- (iv) Average level

[June 2021 (4 Marks)]

Ans.

$$\begin{aligned}
 \text{Re-order level} &= (\text{Maximum usage} \times \text{Maximum delivery period}) \\
 &= (250 \times 2) \\
 &= 500
 \end{aligned}$$

$$\begin{aligned}
 \text{Minimum level} &= \text{Re-order level} - (\text{Normal usage} \times \text{Average delivery period}) \\
 &= 500 - (150 \times 1.5) \\
 &= 275
 \end{aligned}$$

$$\begin{aligned}
 \text{Maximum level} &= (\text{Re-order level} + \text{Re-ordering qty.}) - (\text{Minimum usage} \times \text{Minimum delivery period}) \\
 &= (500 + 1,000) - (50 \times 1) \\
 &= 1,450
 \end{aligned}$$

$$\begin{aligned}
 \text{Average level} &= \frac{\text{Minimum Level} + \text{Maximum Level}}{2} \\
 &= (275 + 1,450) / 2 \\
 &= 862.5
 \end{aligned}$$

OR

$$\begin{aligned} \text{Average Level} &= \text{Minimum Level} + \frac{1}{2} \text{ Re-ordering Quantity} \\ &= 275 + \frac{1}{2} 1,000 \\ &= 775 \end{aligned}$$

Problem No. 24] The quarterly production of a company's product which has a steady market of 20,000 units. Each unit of a product requires 0.5 kg of raw material at a cost of ₹ 20 per kg. The cost of placing an order for raw material is ₹ 100 and inventory carrying cost is 10%.

You are required to calculate:

- (i) Economic order quantity
- (ii) Number of order placed in a year.

[Dec. 2021 (4 Marks)]

Ans.

Calculation of annual consumption:

$$20,000 \times 4 = 80,000$$

For 1 unit - 0.5 kg of raw material

For 80,000 - ?

$$80,000 \times 0.5 = 40,000$$

$$\text{EOQ} = \sqrt{\frac{2 \times \text{Annual consumption} \times \text{Ordering cost}}{\text{Carrying cost p. u. p. a}}}$$

$$= \sqrt{\frac{2 \times 40,000 \times 100}{20 \times 10\%}}$$

$$= \sqrt{\frac{80,00,000}{2}}$$

$$\text{EOQ} = 2,000$$

Calculation of No. of orders:

$$\frac{\text{Annual consumption}}{\text{Re-ordering or EOQ qty.}} = \frac{40,000}{2,000} = 20 \text{ orders}$$

UNIT-IV: RECEIVABLE MANAGEMENT

THEORETICAL QUESTIONS

Q. 24. Write a note on: Undisclosed Factoring.

[June 2000 (5 Marks)]

Or

Write a note on: Recourse Factoring.

[June 2003 (5 Marks)]

Ans. Various types of factoring are as follows:

- (1) **Non-Recourse/Full factoring:** Under this type of factoring the bank takes all the risk and bear all the loss in case of debts becoming bad debts.
- (2) **Recourse Factoring:** Under this type of factoring the bank purchases the receivables on the condition that any loss arising out of bad debts will be borne by the company which has taken factoring.
- (3) **Maturity Factoring:** Under this type of factoring bank does not give any advance to the company rather bank collects it from customers and pays to the company either on the date of collection from the customers or on a guaranteed payment date.
- (4) **Advance Factoring:** Under advance factoring arrangement the factor provides an advance against the uncollected and non-due receivables to the firm.
- (5) **Undisclosed Factoring:** Under this type of factoring, the customer is not informed of the factoring arrangement. The firm may collect dues from the customer on its own or instruct to make remit once at some other address.
- (6) **Invoice Discounting:** Under this type of factoring the bank provide an advance to the company against the account receivables and in turn charges interest rate from the company for the payment which bank has given to the company.

Q. 25. Write a short note on: Bills re-discounting.

[June 2004 (2 Marks)], [Dec. 2012 (3 Marks)]

Ans. Generally bill of exchange and other negotiable instruments are discounted with bank. But due to such discounting bank may face a problem of liquidity hence banks or financial institutions discounts the bill discounted in other banks or financial institution or with central bank which is called as rediscounting of bill.

Banks can rediscount the bills with the RBI and other approved institutions like LIC, GIC, UTI, ICICI, IFCI, DFHI etc.

As per RBI's guidelines regarding bill discounting by the commercial banks should not rediscount the bill discounted by NBFC as the RBI has provided enough rediscounting facilities to the banks, they can get the bill rediscounted from other banks.

Establishment of **Discount & Finance House of India (DFHI)** is a landmark step in this direction.

DFHI aims to impart liquidity to commercial bills, which have already been discounted by commercial banks or FI. For this purpose, it announces its bid and rediscount rates on a fortnightly basis.

Q. 26. Distinguish between: Factoring & Bill Discounting.

[Dec. 2009 (5 Marks)], [June 2012 (5 Marks)]

[Dec. 2012 (5 Marks)], [June 2021 (4 Marks)]

Ans. Following are the main points of difference between factoring & bill discounting:

Points	Factoring	Bill Discounting
Meaning	Factoring is an arrangement to have debts collected by a third party entity for a fee. It is outsourcing of receivables to the factoring company.	Generally bill of exchange and other negotiable instruments are discounted with bank. But due to such discounting bank may face a problem of liquidity.

Points	Factoring	Bill Discounting
		hence banks or financial institutions discounts the bill discounted in other banks or financial institution or with central bank which is called as rediscounting of bill.
Collection	Under factoring agreement, the factor undertakes the responsibility of collecting client's bills.	Under a bill discounting arrangement, the drawer undertakes the responsibility of collecting the bills and remitting the proceeds to the financing agency.
Types	Factoring can be either with recourse or without recourse.	Bill discounting is always with recourse.
Services	Apart from collecting clients bill a factor may offer other services like financing and managing the receivable of a client.	The finance house discounting bills and does not offer any non-financial services.

Q. 27. Write a short note on: Factoring.

[Dec. 2007 (5 Marks)], [Dec. 2010 (4 Marks)], [June 2013 (5 Marks)]

Ans. Factoring is an arrangement to have debts collected by a third party entity for a fee. A large business house has two options, namely either to manage its own receivables or to entrust the task of such management to a third party for a fee. In factoring arrangement the debts as and when fall due are collected by the factor.

Parties in Factoring: The factoring transaction involves three parties:

- The Seller, who has produced the goods/services and raised the invoice.
- The Buyer, the consumer of goods/services and the party to pay.
- The Factor, the financial institution that advances the portion of funds to the seller and recovers the amount from buyer.

Factoring Arrangement:

1. The factor enters into an agreement with the seller for rendering factor services i.e. collection of receivables/debts.
2. The factor pays 80% or more of the amount of receivables copies of sale documents.
3. The factor receives payments from the buyer on due dates and pays the balance money to the seller after deducting the service charges.

Functions of a Factor: The purchase of book debts or receivables is central to the function of factoring permitting the factor to provide basic services such as:

- ◆ Administration of sellers' sales ledger.
- ◆ Collection of receivables purchased.
- ◆ Provision of finance.
- ◆ Protection against risk of bad debts/credit control and credit protection.
- ◆ Rendering advisory services by virtue of their experience in financial dealings with customers.

Q. 28. Distinguish between: Factoring & Debt Securitization

[Dec. 2008 (5 Marks)]

Ans. Following are the main points of difference between factoring and debt securitization:

Points	Factoring	Debt Securitization
Meaning	Factoring is an arrangement to have debts collected by a third party entity for a fee. It is outsourcing of receivables to the factoring company.	Securitization is a process by which a company clubs its different financial assets to form a consolidated financial instrument which is issued to investors. In return, the investors in such securities get interest.
Assets transferred	Only one type of asset is transferred called "Receivable".	In securitization, the securitized assets are not limited to receivables. Virtually any income-producing asset like residential mortgage loans, car finance receivables, credit card receivables, corporate loans, equipment finance receivables, export and trade finance receivables is capable of being securitized.
Finance	Factoring involves short term finance arrangement.	Securitization is long term finance arrangement.
Parties involved	Three parties are involved i.e. the Company, factoring firm and debtors.	Four parties are involved in securitization i.e. Obligor, Owner, Special purpose vehicle, investor.
Governance of process	Process is governed by private contract between company and factoring firm.	Securitization process is governed by capital market mechanism.
Who use	Factoring is mainly used by supplier or trader in manufacturer or service sector.	Securitization is mainly used by corporations and financial institutions.
Credit rating	Since factoring involves only bank and the company there is no need for any credit rating	Securitization involves many investors and therefore it is necessary to take credit rating before going for securitization of receivables.
Types	Factoring is of many types and can be with or without recourse.	Securitization is done without recourse.

Q. 29. Write a short note on: Forfaiting.

[Dec. 2011 (5 Marks)]

Ans. Forfaiting is a means of financing used by exporters that enables them to receive cash immediately by selling their medium-term receivables (the amount an importer owes the exporter) at a discount, and eliminate risk by making the sale *without recourse*, meaning the exporter has no liability regarding possible default by the importer on paying the receivables. The forfaiter is the individual or entity that purchases the receivables, so the importer is then obligated to pay the receivables amount to the forfaiter. A forfaiter is typically a bank or a financial firm that specializes in export financing.

A forfaiter purchase of the receivables, the sum of which is typically guaranteed by the importer's bank, expedites payment and cash flow for the exporter, in addition to eliminating the credit risk involved with making a sale to an importer on credit. Forfaiting expedites payment for the exporter and facilitates the transaction for an importer that cannot afford to pay in full for goods upon delivery.

Forfaiting is most commonly used in regard to large, international sales of commodities or capital goods where the sale price exceeds \$ 1,00,000.

Through forfaiting, the importer's receivables are converted into a debt instrument that can be freely traded on a secondary market. The receivables are typically in the form of unconditional bills of exchange or promissory notes that are legally enforceable, providing security for the forfaiter or a subsequent purchaser of the debt obligation. These debt instruments can have a wide range of possible maturities, from as short as one month to as long as 10 years. Normally, the maturity falls within 1 to 3 years from the time of sale.

Advantages of Forfaiting: Forfaiting eliminates all risk of the exporter not receiving payment, including credit risk and transfer risk, as well as risks posed by foreign exchange rate or interest rate changes.

By transforming a credit-based sale into a cash transaction, forfeiting simplifies the transaction, providing immediate cash flow and eliminating collection costs for the seller and the need to carry the accounts receivables on its balance sheet as contingent liabilities.

Forfaiting is flexible and can be tailor-made to suit the needs of the exporter and adapted to a variety of international transactions. It can be utilized in place of credit or insurance coverage for a sale. It is helpful in situations where a country or a specific bank within the country does not have access to an export credit agency, allowing an exporter to transact business with buyers in countries with high levels of political risk.

Q. 30. Risk is always associated with receivables. Comment.

[June 2012 (5 Marks)]

Ans. Risk is associated with receivables. In business there always remains a risk of default by debtors. Risk of non-payment may due to insolvency, liquidity problems or intention of cheating. Thus, risk of receivables turning into bad debts is an integral part of business.

The risk is related to bad debt losses to the profit margin *i.e.* a company can bear more risk with great profit margin. Risk associated with receivables can be accounted for by adjusting -

- (1) The discount rate used to ascertain the present value of receivables.
- (2) The cash flow resulting from receivables. Standard deviation and co-efficient of variation is tool that may be used to determine the degree of risk associated with cash group.

Q. 31. Discuss the steps involved in the process of factoring.

[Dec. 2013 (5 Marks)]

Or

Write a short note on: Mechanics of factoring.

[June 2005 (5 Marks)], [June 2007 (5 Marks)]

Ans. The steps involved in factoring operations are:

1. Customer (buyer) places the order to the client (seller).
2. Client (seller) fixes the limit.
3. Client delivers the goods and instructs the customer to make payment to the factor.
4. Factor sends the invoice copy to the client.
5. Factor makes the prepayment of invoice to the client.

6. Factor follows up with the customer.
7. Customer makes the payment to the factor.
8. Factor after deducting its fees and other charges pays the balance amount to the client.

Q. 32. How do firms manage required level of receivables? [June 2014 (4 Marks)]

Ans. Timely realization of receivables is an important element of working capital management. Practices in this respect vary from firm to firm. Most of the firms dissuade credit sales to first time customers and gradually allow credit after development of relationship. While giving credit, some firms obtain post dated cheques from their clients. In other cases, firms have special staff earmarked for recovery efforts. The key elements here are the opportunity cost of funds blocked in receivables and the net expenses of maintaining recovery infrastructure. Expenses of maintaining recovery infrastructure include the costs associated with recovering the amount from debtors. If the funds realized from receivables can yield better return than the interest recovered from debtors, then the firm would be better off by promoting cash sales.

Q. 33. Factoring is a financial option for the management of receivables. In the light of this statement, explain the meaning and advantage of factoring. [June 2015 (3 Marks)]

Ans. Factoring is an arrangement to have debts collected by a third party entity for a fee.

Advantages of Factoring: Factoring is becoming popular all over the world on account of various services offered by the institutions engaged in it. Factors render services ranging from bill discounting facilities offered by the commercial banks to total takeover of administration of credit sales including maintenance of sales ledger, collection of accounts receivables, credit control, protection from bad debts, provision of finance and rendering of advisory services to their clients. Thus, factoring is a tool of receivables management employed to release the funds tied up in credit extended to customers and to solve problems relating to collection, delays and defaults of the receivables.

A firm that enters into factoring agreement is benefited in a number of ways, some of the important benefits are outlined below:

The factor provides specialised services with regard to sales ledger administration and credit control and relieves the client from botheration of debt collection. He can concentrate on the other major areas of his business and improve his efficiency.

- ◆ The advance payments made by the factor to the client in respect of the bills purchased increase his liquid resources. He is able to meet his liabilities as and when they arise thus improving his credit standing position before suppliers, lenders and bankers. The factor's assumption of credit risk relieves him from the tension of bad debt losses. The client can take steps to reduce his reserve for bad debts.
- ◆ It provides flexibility to the company to decide about extending better terms to their customers.
- ◆ The company itself is in a better position to meet its commitments more promptly due to improved cash flows.
- ◆ Enables the company to meet seasonal demands for cash whenever required.

- ◆ Better purchase planning is possible. Availability of cash helps the company to avail cash discounts on its purchases.
- ◆ As it is an off balance sheet finance, thus it does not affect the financial structure. This would help in boosting the efficiency ratios such as return on asset etc.
- ◆ Saves the management time and effort in collecting the receivables and in sales ledger management.
- ◆ Where credit information is also provided by the factor, it helps the company to avoid bad debts.
- ◆ It ensures better management of receivables as factor firm is specialised agency for the same.

Q. 34. Distinguish between: Forfaiting & Export Factoring.
[Dec. 2015 (5 Marks)], [Dec. 2017 (4 Marks)]

Ans. Following are the main points of difference between forfaiting & export factoring:

Points	Forfaiting	Export Factoring
Meaning	Forfaiting is a means of financing used by exporters that enables them to receive cash immediately by selling their medium-term receivables at a discount, and eliminate risk by making the sale without recourse, meaning the exporter has no liability regarding possible default by the importer on paying the receivables.	Export factoring is an arrangement to have export debts collected by a third party entity for a fee.
Types	Forfaiting is always without recourse.	Export factoring can be either with recourse or without recourse.
Services	Forfaiting is pure financing agreement.	Export factoring is finance agreement and may also involve other service to client in form of administration and collection and so on.
Finance	A forfaiter discount the entire value of bill.	In export factoring the factor finances between 75%-85% and retains a factor reserve which is paid after maturity.

Q. 35. Credit terms to debtors can be relaxed so long as additional cost of investment does not exceed additional contribution. [Dec. 2017 (5 Marks)]

Ans. Receivables means the book debts or debtors and these arise, if the goods are sold on credit. Debtors involve an element of risk and bad debts also. Hence, it calls for careful analysis and proper management. The goal of receivables management is to maximize the value of the firm by achieving a trade-off between risk and profitability. Timely realization of receivables is an important element of working capital management. Practices in this respect vary from firm to firm. Relaxing the credit policy means increasing the credit period. If the firm is allowing 30 days for making payment to debtors then increase in such period to 45 days is known as relaxing the credit policy. Obviously by relaxation in credit period the firm's sale will

increase which will also lead to increase the profit. However, the cost of administration, bad debt and cost of investment in debtor will also increase.

Thus, firm should make proper analysis as what extent the credit period can be relaxed. Any increase in credit period by which firm's increase in profit due to increased sale is less than its cost as referred above will lead to loss and hence it is rightly said that credit terms to debtors can be relaxed so long additional cost of investment does not exceed additional contribution.

PROBLEMS & SOLUTIONS

Problem No. 25] A company, whose current sales are ₹ 15,00,000 per annum and average collection period is 30 days, wants to pursue a more liberal credit policy to improve the sales.

The following data are available:

Credit Policy	Increase in collection period (Days)	Increase in Sales (₹)
A	15	60,000
B	30	90,000
C	45	1,50,000
D	60	1,80,000
E	90	2,00,000

The selling price per unit is ₹5. Average cost per unit is ₹4 and variable cost per unit is ₹2.75. The required rate of return on additional investment is 20%. Assume 360 days in a year and nil bad debts loss. Which of the above policies would you recommend and why? [June 2015 (8 Marks)]

Ans.

Statement showing evaluation of credit policies:

Particulars	Present 30 days	Policy A 45 days	Policy B 60 days	Policy C 75 days	Policy D 90 days	Policy E 120 days
Annual sales	15,00,000	15,60,000	15,90,000	16,50,000	16,80,000	17,00,000
Variable cost	8,25,000	8,58,000	8,74,500	9,07,500	9,24,000	9,35,000
Fixed cost	3,75,000	3,75,000	3,75,000	3,75,000	3,75,000	3,75,000
Total cost	12,00,000	12,33,000	12,49,500	12,82,500	12,99,000	13,10,000
Gross profit	3,00,000	3,27,000	3,40,500	3,67,500	3,81,000	3,90,000
(-) Required return [Debtors × 20%]	(20,000)	(30,825)	(41,650)	(53,438)	(64,950)	(87,333)
Profit	2,80,000	2,96,175	2,98,850	3,14,062	3,16,050	3,02,667
Incremental Profit	-	16,175	18,850	34,062	36,050	22,667
Debtors (on cost)	1,00,000	1,54,125	2,08,250	2,67,188	3,24,750	4,36,667

Analysis: Policy D having credit period of 90 days should be adopted as it yield maximum incremental income over present income.

Problem No. 26] A group of new customers with 10% risk of non-payment, desires to establish business connection with you. The group desires one and a half months credit and is likely to increase the sales of your concern by ₹ 1,20,000 per annum.

Cost of sales would be 80% of sales. Tax rate is 30% and required rate of return is 40% (after tax). Should the new business connection be established? Give your decision with supporting calculations. [Dec. 2015 (4 Marks)]

Ans.

Particulars	₹
Increase in sales	1,20,000
(-) Cost of sales (80% of sales)	(96,000)
Gross profit	24,000
(-) Bad debts (10% of sales)	(12,000)
Profit before tax	12,000
(-) Tax @ 40%	(4,800)
Profit after tax	7,200

$$\begin{aligned} \text{Debtors (on cost)} &= \left[\text{Total Cost} \times \frac{\text{Credit Period}}{12} \right] \\ &= \left[96,000 \times \frac{1.5}{12} \right] \\ &= 12,000 \end{aligned}$$

Calculation of incremental return:

$$\frac{\text{Incremental Profit}}{\text{Incremental investment in debtors}} \times 100 = \frac{7,200}{12,000} \times 100 = 60\%$$

Analysis: The required rate of return on investment is 40%. The incremental return is 60%; hence proposed policy is acceptable.

Problem No. 27] Esha Ltd. is a company having annual credit sales of ₹ 30 lakh. It deals in only one product. Currently it has an average collection period of 30 days. It is anticipated that liberalization of credit terms can lead to increase in sales as indicated below:

Policy	Increase in collection period (Days)	Increase in Sales (₹ '000)
A	15	200
B	30	300
C	45	350
D	60	375

The unit selling price for the product is ₹ 50 and its unit variable cost is ₹ 30. At current volume it has a unit total cost of ₹ 35. It also noted that the liberalization of credit will lead to the following incidence of bad debt losses:

Policy	Increase in collection period (Days)	Bad debts (% on sales)
A	15	0.5
B	30	1.0
C	45	1.5
D	60	2.0

Currently the company is free from bad debt losses. What will be the most rewarding credit policy under these circumstances? The company expects a return of 18% on investment.

Tabulate your presentation. Assume 360 days in a year. [Dec. 2015 (10 Marks)]

Ans.

Statement showing evaluation of credit policies:

Particulars	Present 30 days	Policy A 45 days	Policy B 60 days	Policy C 75 days	Policy D 90 days
Credit period					
No. of units	60,000	64,000	66,000	67,000	67,500
Annual sales	30,00,000	32,00,000	33,00,000	33,50,000	33,75,000
Variable cost	18,00,000	19,20,000	19,80,000	20,10,000	20,25,000
Fixed cost	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000
Total cost	21,00,000	22,20,000	22,80,000	23,10,000	23,25,000
Gross profit	9,00,000	9,80,000	10,20,000	10,40,000	10,50,000
(-) Required return [Debtors × 18%]	(31,500)	(49,950)	(68,400)	(86,625)	(1,04,625)
(-) Bad debts	-	(16,000)	(33,000)	(50,250)	(67,500)
Profit	8,68,500	9,14,050	9,18,600	9,03,125	8,77,875
Incremental Profit	-	45,550	50,100	34,625	9,375
Debtors (on cost)	1,75,000	2,77,500	3,80,000	4,81,250	5,81,250

Analysis: Policy B having credit period of 90 days should be adopted as it yields maximum incremental income over present income.

Problem No. 28] Alliance Ltd. having annual sales of ₹80 lakh extends 30 days credit period to its debtors. The variable cost is estimated at 80% on sales and fixed costs are ₹8 lakh. The company intends to change the credit policy for which the following information is given:

Credit policy	Average collection period (days)	Annual sales (₹ in lakh)
A	45	86
B	60	90
C	75	92

Rate of return (pre-tax) required on investment is 20%.

You are required to assess the most profitable policy with the help of incremental approach.

Calculations may be restricted to two decimal points. Assume 365 days in a year.

[June 2016 (8 Marks)]

Ans.

Statement showing evaluation of credit policies:

Particulars	Present 30 days	Policy A 45 days	Policy B 60 days	Policy C 75 days
Credit period				
Annual sales	80.00	86.00	90.00	92.00
Variable cost	64.00	68.80	72.00	73.60
Fixed cost	8.00	8.00	8.00	8.00

Particulars	Present	Policy A	Policy B	Policy C
Total cost	72.00	76.80	80.00	81.60
Gross profit	8.00	9.20	10.00	10.40
(-) Cost of investment in debtors (Debtors × Required return)	(1.18)	(1.89)	(2.63)	(3.35)
Profit	6.82	7.31	7.37	7.05
Incremental Profit	-	0.49	0.55	0.23
Debtors (on cost)	5.9178	9.4685	13.1507	16.7671

Analysis: Policy B having credit period of 60 days should be adopted as it yields maximum incremental income over present income.

Problem No. 29] A manufacturing firm has credit sales of ₹ 360 lakh and its average collection period is 30 days. The financial controller estimates bad-debt losses at around 2% of credit sales. The firm spends ₹ 1,40,000 annually on debtors' administration. This cost comprises of telephone and internet bills along with salaries of staff members.

A factoring firm has offered to buy the firm's receivables. The factor will charge 1% commission and will pay an advance against receivables on an interest @ 15% p.a. after withholding 10% as reserve. What should the firm do? Assume 360 days in a year.

[June 2016 (8 Marks)]

Ans. Calculation of average receivables:

$$\text{Credit Sales} \times \frac{\text{Credit Period}}{360} = 3,60,00,000 \times \frac{30}{360} = 30,00,000$$

Computation of net amount paid to the firm:

Particulars	₹
Average Receivables	30,00,000
(-) Reserve (30,00,000 × 10%)	(3,00,000)
(-) Factor Commission (30,00,000 × 1%)	(30,000)
	26,70,000
(-) Interest on advance [26,70,000 × 15% × $\frac{30}{360}$]	(33,375)
Net amount paid to the firm	26,36,625

Computation of net cost/savings to the firm (Annual basis):

Particulars	₹
Costs:	
Factoring commission [30,000 × $\frac{360}{30}$]	3,60,000
Interest charges [33,375 × $\frac{360}{30}$]	4,00,500
(A)	7,60,500

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Particulars	₹
Savings:	
Cost of administration of receivables	1,40,000
Cost of bad debts (3,60,00,000 × 2%)	7,20,000
	(B) 8,60,000
Net savings to firm (B) - (A)	99,500

Analysis: Since, the cost of factoring is less than the cost of self administration of debtor's balances, it is suggested to avail factoring services.

Problem No. 30] Under a factoring arrangement Ranki Factors Services Limited has advanced a sum of ₹ 140 lakh against the receivable purchased from Aangi Limited. The factoring agreement provides for an advance payment of 80% (maintaining factor reserve of 20% to provide for disputes and deductions relating to the bills assigned) of the value of factored receivable and for guaranteed payment after 3 months from the date of purchasing the receivables.

The advance carries a rate of interest of 12% per annum compounded quarterly and the factoring commission is 2.5% of the value of factored receivables. Both the interest and commission are collected upfront.

You are required to:

- Compute the amount of advance payable to Aangi Limited.
- Calculate per annum the effective cost of funds made available to Aangi Limited.

[June 2017 (5 Marks)]

Ans.

- Computation of amount of advance payable to Aangi Ltd.:

Particulars	(₹ in lakh)
Value of factored receivables (140/0.80)	175
Maximum permissible advance	140
(-) Commission @ 2.5% [175 × 2.5%]	(4.375)
	135.625
(-) Discount charge [140 × 12% × 90/360]	(4.2)
Amount of advance payable to Aangi Ltd.	131.425

- Effective cost of funds made available to Aangi Ltd.:

Discount charges expressed as a percentage of funds made available to Aangi Ltd.

$$= (4.20 / 131.425) \times 100 = 3.1957\% \text{ per quarter}$$

$$\text{Annualized rate of interest} = [(1 + 3.1957/100)^4 - 1]$$

$$= 0.1341$$

$$= 13.41\%$$

Problem No. 31] BG Co.'s present annual sales amount to ₹ 36 lakh at ₹ 12 per unit. Variable costs are ₹ 6 per unit and fixed cost amount to ₹ 2.50 lakh per annum.

Company presently offers credit period of one month to its customers. It is proposed to extend credit period to 2 months and 3 months. The following are the estimates of the results likely to be obtained by change of credit terms:

Credit Policy	1 month	2 month	3 month
Increase in Sales %		10	25
% of Bad Debts to Sales	1	2	5

Fixed costs will increased by ₹ 1,00,000 annually after any increase in sales above 20% over the present level.

The company requires a pre-tax return on investment of 20% for the level of risk involved. What will the most rewarding credit policy for the company?

[Dec. 2017 (16 Marks)]

Ans.

Statement showing evaluation of credit policies:

Particulars	Present	Option I	Option II
Credit period	1 month	2 months	3 months
No. of units	3,00,000	3,30,000	3,75,000
Annual sales	36,00,000	39,60,000	45,00,000
Variable cost	18,00,000	19,80,000	22,50,000
Fixed cost	2,50,000	2,50,000	3,50,000
Total cost	20,50,000	22,30,000	26,00,000
Bad debts	36,000	79,200	2,25,000
Profit	15,14,000	16,50,800	16,75,000
(-) Cost of investment in debtors (Debtors × Required return)	(34,167)	(74,333)	(1,30,000)
Income	14,79,833	15,76,467	15,45,000
Incremental income	-	96,634	65,167
Debtors (on cost)	1,70,833	3,71,667	6,50,000

Analysis: Option I having credit period of 2 months should be adopted as it yield maximum incremental income over present income.

Problem No. 32] Naman Ltd. currently makes all sales on credit and offers no cash discount. It is considering a 2% cash discount for payment within 10 days. The firm's current average collection period is 60 days, sales are 2,00,000 units, selling price is ₹ 30 per unit, variable cost per unit is ₹ 20 and average cost per unit is ₹ 25 at current sales volume.

It is expected that the change in credit terms will result in increase in sales to 2,25,000 units and the average collection period will fall to 45 days. However, due to increased sales, increased working capital required will be ₹ 1,00,000 (it does not take into account the effect on debtors). Assuming that 50% of the total sales will be on cash discount and 20% is the required return on investment, should the proposed discount be offered? Assume 360 days in a year. Give your assessment.

[Dec. 2018 (4 Marks)]

Ans.

Calculation of fixed cost = $(25 - 20) \times 2,00,000 = 10,00,000$

Statement showing evaluation of credit policy:

Particulars	Present Policy	Proposed Policy
Average collection period	60 days	45 days
No. of units	2,00,000	2,25,000
Sale price per unit	30	30
Variable cost per unit	20	20
Total sales	60,00,000	67,50,000
Variable cost	40,00,000	45,00,000
Fixed cost	10,00,000	10,00,000
Total cost	50,00,000	55,00,000
Profit	10,00,000	12,50,000
(-) Cost of investment in debtors (Debtors \times Required return)	(1,66,667)	(1,37,500)
(-) Cost of investment in WC (Working capital \times Required return)	-	(20,000)
(-) Discount	-	(67,500)
Net profit	8,33,333	10,25,000
Incremental Profit	-	1,91,667

$$\text{Debtors (on cost)} = \left[\text{Total Cost} \times \frac{\text{Credit Period}}{360} \right] \quad \begin{array}{cc} 8,33,333 & 6,87,500 \end{array}$$

Incremental investment in working capital - 1,00,000

Analysis: Since profit is increasing by ₹2,16,417; proposed policy is acceptable.

Problem No. 33] A bank is analyzing the receivables of Rolly Ltd. in order to identify acceptable collateral for a short-term loan. The company's credit policy is 2/10 net 30. The bank lends 75% on accounts where customers are not currently overdue and where the average payment period does not exceed 10 days past the net period. A schedule of Rolly Ltd. receivables has been prepared and is given below:

Account	Amount (₹)	Days Outstanding	Average Payment Period (in days)
70	50,000	12	20
90	18,000	45	60
110	23,000	22	24
111	4,600	9	10
141	36,000	50	45
161	58,000	16	10
173	28,000	27	48
	<u>2,17,600</u>		

How much will the bank lend on a pledge of receivables, if the bank uses a 10% allowance for cash discount and returns?

[June 2019 (4 Marks)], [Dec. 2021 (4 Marks)]

Ans.

The Rolly Ltd. credit policy is 2/10 Net 30.

The bank lends 75% on accounts where customers are not currently overdue and where the average payment period does not exceed 10 days past the net period i.e. 30 days. From the schedule of receivables of Rolly Ltd., it is observed that Account No. 90 and Account No. 141 are currently overdue and for Account No. 173 the average payment period exceeds 40 days so these accounts does not fulfil the credit eligibility criterion of bank and hence, the Account Nos. 90, 141 & 173 are eliminated for the purpose of calculation of credit. Therefore, the selected Accounts are Account Nos. 70, 110, 111 & 161.

Statement showing the calculation of amount which bank will lend on a pledge of receivables if the bank uses 10% allowances for cash discount and returns:

Account No.	Amount (₹)	Allowances for cash discount and returns 10 % of (2)	Net Amount (2) - (3)	Loan amount @ 75% of (4)
(1)	(2)	(3)	(4)	(5)
70	50,000	5,000	45,000	33,750
110	23,000	2,300	20,700	15,525
111	4,600	560	4,140	3,105
161	58,000	5,800	52,200	39,150

Problem No. 34] Precision Tools Ltd. currently has sales of ₹ 30,00,000 with an average collection period of two months. At present, no discounts are offered to the customers. The management of the company is thinking to allow a discount of 2% on cash sales which will result as under:

(i) The average collection period would reduce to one month.

(ii) 50% of customers would take advantage of 2% discount.

The company would normally require a 25% return on its investment. Advise the management whether to extend the discount on cash sales. [Dec. 2020 (4 Marks)]

Ans.

Statement showing evaluation of credit policies:

Particulars	Present Policy	Proposed Policy
Average collection period	2 months	1 month
Sales	30,00,000	30,00,000
Increase in profit due to reduction in debtors	-	62,500
Decrease in profit due to discount	-	(30,000)
Net increase in profit		32,500

$$\text{Debtors (on cost)} = \left[\text{Total Cost} \times \frac{\text{Credit Period}}{12} \right] \quad 5,00,000 \quad 2,50,000$$

Analysis: Since profit is increasing by ₹ 32,500; proposed policy is acceptable.

Problem No. 35] Following are the details regarding operations of XYZ Company Ltd. during a period of last 12 months:

Sales	₹ 12,00,000
Selling Price per unit	₹ 10
Variable cost per unit	₹ 7
Total cost per unit	₹ 9
Credit period allowed to customers	One month

The company is considering proposal for a more liberal credit policy by increasing the average collection period from one month to two months. This relaxation is expected to increase sales by 25%.

You are asked to advise the company whether to proceed on adoption of new credit policy assuming that the company's required rate of return on investment is 30% p.a.

[June 2021 (4 Marks)]

Ans.

Statement showing evaluation of credit policies:

Particulars	Present Policy (1 Month)	Proposed Policy (2 Months)
No. of units	1,20,000	1,50,000
Sale price per unit	10	10
Sales	12,00,000	15,00,000
Variable cost	8,40,000	10,50,000
Fixed cost	2,40,000	2,40,000
Total cost	10,80,000	12,90,000
Profit	1,20,000	2,10,000
Incremental Profit	-	90,000
Debtors (on cost) = $\left[\text{Total Cost} \times \frac{\text{Credit Period}}{12} \right]$	90,000	2,15,000
Incremental investment in debtors	-	1,25,000

Calculation of incremental return:

$$\frac{\text{Incremental Profit}}{\text{Incremental investment in debtors}} \times 100 = \frac{90,000}{1,25,000} \times 100 = 72\%$$

Analysis: The required rate of return on investment is 25%. The incremental return is 72%; hence proposed policy is acceptable.

Problem No. 36] A group of customer wants to enter into a contract with you to buy goods worth ₹ 20 lakh, deliveries to be made in four equal quarterly instalments. Sales price ₹ 200, variable cost ₹ 100. Additional expenditure ₹ 10,000 p.a. 15% of

amount of bills would be received after 30 days, 25% after 60 days, 40% after 90 days and 20% after 100 days.

Assuming an opportunity cost of 20% of funds locked up in account receivables, will it be desirable to accept the new proposals? Assume 360 days in a year.

[Dec. 2021 (4 Marks)]

Ans.

Calculation of average collection period:

Days	% of bill collected	Product
30	15%	4.5
60	25%	15
90	40%	36
100	20%	20
Average Collection Period		75.5

Calculation of profit:

Sales units $[20,00,000 \div 200] = 10,000$ units

Debtors $= 20,00,000 \times 75.5/360 = 4,19,445$

Particulars	₹
Sales	20,00,000
(-) Variable Cost $(10,000 \times 100)$	(10,00,000)
(-) Additional expenditure	(10,000)
(-) Cost of investment in debtors [4,19,445 × 20%]	(83,889)
Profit	9,06,111

Decision: Since after entering in to a contract with a new group there is a profit. Hence the deal should be accepted.

SECURITY ANALYSIS

THEORETICAL QUESTIONS

Q. 1. Write a short note on: Sharpe Index Model.

[Dec. 2007 (5 Marks)]

Ans. One Simplification of CAPM formula was done by Sharpe, who developed the Single-Index Model. The single-index model imposes restrictions on how security returns can co-vary. In particular, it is assumed that all covariance arises through an "index."

Sharpe's model has since been extended to multi-index models, and leads to a more general theory called the Arbitrage Pricing Theory, developed by Ross.

The major assumption of Sharpe's single-index model is that all the co-variation of security returns can be explained by a single factor. This factor is called the index, hence the name "single-index model."

According to the Sharpe single index model the return for each security can be given by the following equation:

$$R = \alpha I + \beta I + E$$

Where,

R = Expected return on a security

α = Alpha Coefficient

β = Beta Coefficient

I = Expected Return an index

E = Error term with a mean of zero and a constant standard deviation.

Q. 2. Write a short note on: Dow Jones Theory.

[June 2006 (5 Marks)]

Ans. It is one of the earliest theories of technical analysis. The theory was formulated by Charles H. Dow of Dow Jones & Co. who was the first editor of Wall street Journal of USA. According to this theory, share prices demonstrate a pattern over 4 to 5 years.

These patterns can be divided into three distinct cyclical trends - primary, secondary and minor trends.

The primary trend lasts from one to three years. Over this period, the markets exhibit definite upward or downward movement which is punctuated by shorter spans of trend reversal in the opposite directions. The trend reversal is called the secondary trend. Primary trend is indicative of the overall pattern of movement.

If the primary trend is upward, it is called a bullish phase of the market. If the primary trend is downwards, it is called a bearish phase.

Q. 3. Write a short note on: Technical Charts. [Dec. 2006 (5 Marks)]

Ans. Technical Charts: These are the plotting of prices and trading volumes on charts. The purpose of reading and analyzing these charts is to determine the demand-supply equation at various levels and thus to predict the direction and extent of future movement of the prices. The charts are not infallible but because of their repeated accuracy, they have come to be accepted. In all the charts, a correlation exists between market price action and the volume of trading when the price increase is accompanied by a surge in trading volumes, it is a sure sign of strength. On the other hand, when the decline in share prices is accompanied by increased volumes, it is indicative of beginning of bearish trend. There are three ways to construct a chart. These are the Line Chart, Bar Chart and Point & Figure Chart.

- (a) **Line Chart:** In a Line Chart, the closing prices of successive time periods are connected by straight lines and the intra-period highs and lows of stock prices are ignored. This type of chart is useful for making broad analysis over a longer period of time.
- (b) **Bar Chart:** These charts portray intra-period high, low and closing values on a single vertical line designated for each time period. The vertical dimensions of the line represent price. The horizontal axis of the chart indicates the complete time period of analysis. Bar charts focus on time, volume and price.
- (c) **Point & Figure Chart:** Point and figure charting does not plot price against time as time-based charts do. Instead it plots price against changes in direction by plotting a column of Xs as the price rises and a column of Os as the price falls. Point and Figure charts are based primarily on price action, not time. If there are no significant price moves over time, P&F charts will show no new data.

Q. 4. The portfolio managers generally attempt to diversify risks by investing in debts and equity instruments. Comment. [Dec. 2007 (5 Marks)]

Ans. Equity instruments provide higher returns but also carry high risk. Debt security investments are generally less risky than equity investments. Correspondingly, they typically offer lower potential returns.

Thus, portfolio consisting of both equity and debt instrument can help to minimize overall risk and fetch higher returns.

Q. 5. "Alpha is an indicator of the extent to which the actual return of a stock deviates from those predicted by its beta value." Discuss. [June 2008 (5 Marks)]

Ans. Alpha is an indicator of the extent to which the actual return of a security deviates from those predicated by its beta value. It is denoted by symbol α .

Alpha value help an investor to decide whether security overvalued, undervalued or rightly valued.

- (1) **Positive Alpha Value:** Positive alpha value indicates that expected return is more than required return as per CAPM and hence security is undervalued. Such security should be bought.

- (2) **Negative Alpha Value:** Negative alpha value indicates that expected return is less than required return as per CAPM and hence security is overvalued. Such security should be sold.
- (3) **Zero Alpha Value:** Zero alpha value indicates that expected return is equal to required return as per CAPM and hence security is correctly valued. Such security should be hold.

Q. 6. The risk of the portfolio which combines both a risky and a risk-free asset will be reduced to the standard deviation of the risky security, weighted for its proportionate value in the portfolio." Do you agree? Discuss.

[June 2008 (5 Marks)]

Ans. Risk free security has no risk *i.e.* its standard deviation is zero. If investor invests his whole funds in security having some risk then his portfolio risks is equal to risk of that particular security.

If investor decides to form a portfolio by investing some funds in risk free security and some funds in risk security then his return will be equal weighted average return and his portfolio risk will also be reduced.

Q. 7. Distinguish between: Investment & Speculation.

[June 2008 (5 Marks)], [June 2011 (5 Marks)]

Ans. Following are the main points of difference between investment & speculation:

Points	Investment	Speculation
Meaning	Investment may be defined as a conscious act on the part of a person that involves deployment of money in securities issued by companies with a view to obtain a target rate of return over a specified period of time.	Speculation also involves deployment of funds but it is not backed by a conscious analysis of pros and cons. Mostly it is a spur of the moment activity that is promoted and supported by half-baked information and rumors.
Basis for decision	Fundamental factors, <i>i.e.</i> performance of the company.	Hearsay, technical charts and market psychology.
Risk involved	Moderate risk	High risk
Income	Stable	Uncertain and Erratic
Behaviour of participants	Conservative and Cautious	Daring and Careless

Q. 8. Write a short note on: Semi-strong form of market efficiency.

[Dec. 2008 (5 Marks)]

Or

Distinguish between: Semi-strong form of efficient market hypothesis & strong form of efficient market hypothesis. [Dec. 2007 (5 Marks)], [June 2012 (5 Marks)]

Ans. A market is treated as efficient when all known information is immediately discounted by all investors and reflected in share prices. In such a situation, the only price changes

that occur are those resulting from new information. Since new information is generated on a random basis, the subsequent price changes also happen on a random basis. Major requirements for an efficient securities market are:

- ◆ Prices must be efficient so that new inventions and better products will cause a firm's securities prices to rise and motivate investors to buy the stocks.
- ◆ Information must be discussed freely and quickly across the nations so that all investors can react to the new information.
- ◆ Transaction costs such as brokerage on sale and purchase of securities are ignored.
- ◆ Taxes are assumed to have no noticeable effect on investment policy.
- ◆ Every investor has similar access to investible funds at the same terms and conditions.
- ◆ Investors are rational and make investments in the securities providing maximum yield.

Research studies devoted to test the random walk theory on Efficient Capital Market Hypothesis (ECMH) are put into following three categories:

- (a) **Strong form of efficiency:** This test is concerned with whether two sets of individuals – one having inside information about the company and the other uninformed could generate random effect in price movement. The strong form holds that the prices reflect all information that is known. It contemplates that even the corporate officials cannot benefit from the inside information of the company. The market is not only efficient but also perfect. The findings are that very few and negligible people are in such a privileged position to have inside information and may make above-average gains but they do not affect the normal functioning of the market.
- (b) **Semi-strong form of efficiency:** This hypothesis holds that security prices adjust rapidly to all publicly available information such as functional statements and reports and investment advisory reports, etc. All publicly available information, whether good or bad is fully reflected in security prices. The buyers and sellers will raise the price as soon as a favourable piece of information is made available to the public; opposite will happen in case of unfavourable piece of information. The reaction is almost instantaneous, thus, pointing to the greater efficiency of securities market.
- (c) **Weak form of theory:** This theory is an extension of the random walk theory. According to it, the current stock values fully reflect all the historical information. If this form is assumed to be correct, then both Fundamental and Technical Analysis lose their relevance. Study of the historical sequence of prices, can neither assist the investment analysts or investors to abnormally enhance their investment return nor improve their ability to select stocks. It means that knowledge of past patterns of stock prices does not aid investors to make a better choice.

The theory states that stock prices exhibit a random behaviour.

In this way, if the markets are truly efficient, then the fundamentalist would be successful only when –

- (1) He has inside information, or
- (2) He has superior ability to analyze publicly available information and gain insight into the future of the company.

The empirical evidence of the random walk hypothesis rests primarily on statistical tests, such as runs test, correlation analysis and filter test. The results have been almost unanimously in support of the random walk hypothesis, the weak form of efficient market hypothesis.

Q. 9. CAPM is a tool to workout cost of equity. Comment.
[June 2009 (5 Marks)], [June 2012 (5 Marks)]

Ans. CAPM helps to work out the rate of return required by investors in the form of equity investment. It is calculated as follows:

$$ER = R_f + \beta (R_m - R_f)$$

Where,

R_f = Risk free rate

β = Beta

R_m = Market rate of return

$(R_m - R_f)$ = Risk premium

The required return calculated as above is the return of equity investors and it may be called as the cost of equity and price of share which depends on dividend can be calculated as follows:

$$P_0 = \frac{D_1}{K_e - g}$$

Where,

P_0 = Market price of security

D_1 = dividend at the end of year 1

K_e = Cost of equity

g = Growth rate

Q. 10. Distinguish between: Efficient Portfolio & Optimal Portfolio.
[Dec. 2009 (5 Marks)], [June 2013 (4 Marks)], [Dec. 2016 (4 Marks)]

Ans. Efficient Portfolio: Efficient Portfolio is that which lies along the capital market line. These are the portfolios which offer –

- the maximum level of expected return for a given level of risk or
- the minimum level of risk for a given level of return.

These portfolios lie along the efficient frontier of the set of all possible portfolios in a graph of portfolio returns against portfolio risk. It is not possible to determine that which portfolio an individual will prefer, as it would be decided by the risk-return attitude of investor.

Optimal Portfolio: The efficient portfolio which is best suited to the risk return characteristics of a particular individual investor is an optimal portfolio for the investor. It represents a tangency point of the individual investor's utility function or indifference curve on the efficient frontier.

Q. 11. Intrinsic value of a security is valid for a given set of conditions. Comment.
[Dec. 2013 (5 Marks)]

Ans. Intrinsic value is the actual value of a security as opposed to its market price or book value. Intrinsic value includes other variable such as brand name, trademarks and copyrights. Different investors use different techniques to calculate intrinsic value of security with given set of conditions like dividend per share, growth factor, required rate of return etc. Analysts employ these methods to see whether intrinsic value of security is higher or lower than its current market price allowing them to categorise it as 'overvalued' or 'undervalued' in order to take investment decisions. Hence, intrinsic value of a security is valid for a given set of conditions.

Q. 12. How does Capital Asset Pricing Model (CAPM) help in estimating expected rate of return of a security? [June 2014 (4 Marks)]

Or

Discuss the assumptions of Capital Asset Pricing Model (CAPM) along with limitations. [June 2015 (4 Marks)]

Or

Capital asset pricing model is based on certain critical assumptions. Mention any four assumptions. [June 2016 (4 Marks)]

Ans. Capital Asset Pricing Model (CAPM) provides the link between return and non-diversifiable risk. An investor can use CAPM to assess the extent of additional return over risk-free return, for a given level of systematic risk of a risky investment. Required return of security as per CAPM is calculated as follows:

$$ER = R_f + \beta (R_m - R_f)$$

Where,

R_f = Risk free rate

β = Beta

R_m = Market rate of return

$(R_m - R_f)$ = Risk premium

One can compare CAPM return and expected return for his investment decision.

(a) CAPM Return < Expected return: Buy

(b) CAPM Return > Expected return: Sell

(c) CAPM Return = Expected return: Hold

Example:

Securities	Required return as per CAPM	Expected Return	Strategy	Reason
X	13%	15%	Buy	As security is undervalued
Y	13%	10%	Sell	As security is overvalued
Z	13%	13%	Hold	As security is correctly valued

Assumptions: The CAPM is based on a list of critical assumptions which are as follows:

- ◆ Investors are risk averse and use the expected rate of return and standard deviation of return as appropriate measures of risk and return for their portfolio.

- ◆ Investors make their investments decisions based on a single period horizon which is the immediate next time period.
- ◆ Transaction costs are either absent or so low.
- ◆ Assets can be bought and sold in any desired unit.
- ◆ Taxes do not affect the choice of buying assets.
- ◆ All individuals assume that they can buy the assets at the going market price and they all agree on the nature of the return and risk associated with each investment.

Q. 13. "The investors behaviour criterion provides framework for analysis of risk-return choices" – Markowitz. Do you agree? [June 2014 (5 Marks)]

Ans. Dr. Harry M. Markowitz is credited with developing the first modern portfolio analysis model. It provides a theoretical framework for analysis of risk-return choices. The concept of efficient portfolios has been enunciated in this model. A portfolio is efficient when it yields highest return for a particular level of risk or minimizes risk for a specified level of expected return.

The Markowitz model makes the following assumptions regarding investor behaviour:

- ◆ Investors consider each investment alternative as being represented by a probability distribution of expected returns over some holding period.
- ◆ Investors maximize one period expected utility and possess utility curve, which demonstrates diminishing marginal utility of wealth.
- ◆ Individuals estimate risk on the basis of variability of expected returns.
- ◆ Investors base decisions solely on expected return and variance of returns only.
- ◆ At a given risk level, higher returns are preferred to lower returns. Similarly for a given level of expected returns, investors prefer less risk to more risk.

Simple Markowitz Portfolio Optimization: It is possible to develop a fairly simple decision rule for selecting an optimal portfolio for an investor that can take both risk and return into account. This is called a risk-adjusted return. For simplicity, it can be termed the utility of the portfolio for the investor in question. Utility is the expected return of the portfolio minus a risk penalty. This risk penalty depends on portfolio risk and the investor's risk tolerance.

Limitation of Markowitz Model: The Markowitz approach requires several inputs for portfolio analysis. These are expected return of the securities, variances of their return and co-variances. Calculation of efficient portfolios is easy when the number of securities in the portfolio is two or three. As the number of securities in the portfolio increases, which indeed is the case in real life situations, the amount of calculations required to be done becomes enormous. Further, in the real world, portfolio analysts do not keep track of correlations between stocks of diverse industries. As such, correlating a security to a common index is much more convenient than correlating to a large number of individuals securities. Secondly, the assumption that correlation in the values of two securities depends on the characteristics of these two securities alone is not valid. In fact movement in value of securities is affected by a variety of other factors. A stock index is more representative benchmark that incorporates the general economic conditions more authentically.

Q. 14. Distinguish between: Capital Market Line & Security Market Line.
[Dec. 2014 (4 Marks)]

Ans. Following are the main points of difference between capital market line & security market line:

Points	Capital Market Line	Security Market Line
Meaning	The CML is a line that is used to show the rates of return, which depends on risk-free rates of return and levels of risk for a specific portfolio.	SML, which is also called a Characteristic Line, is a graphical representation of the market's risk and return at a given time.
Measurement of risk	Standard deviation is the measure of risk in CML.	Beta coefficient determines the risk factors of the SML.
Portfolios	Capital Market Line graphs define efficient portfolios.	Security Market Line graphs defines both efficient and non-efficient portfolios.

Q. 15. Sharpe ratio is a risk adjusted measure of return to evaluate the performance of a portfolio. Comment.
[Dec. 2015 (5 Marks)]

Or

"The Sharpe ratio is a risk-adjusted measure of return." Comment.
[June 2017 (5 Marks)]

Ans. The Sharpe ratio is a risk-adjusted measure of return that is often used to evaluate the performance of a portfolio. The ratio helps to make the performance of one portfolio comparable to that of another portfolio by making an adjustment for risk.

The Sharpe ratio is quite simple, which lends to its popularity. It's broken down into just three components:

- ◆ Asset return,
- ◆ Risk-free return and
- ◆ Standard deviation of return.

After calculating the excess return, it is divided by the standard deviation of the risky asset to get its Sharpe ratio.

$$\text{Sharpe Ratio} = \frac{R_p - R_f}{\sigma_p}$$

Where,

R_p = Return of portfolio

R_f = Risk free rate

σ_p = Standard deviation of portfolio's excess return

The idea of the ratio is to see how much additional return you are receiving for the additional volatility of holding the risky asset over a risk-free asset – the higher the better.

A ratio of 1 or more is considered good, 2 and more is very good, and 3 and more is considered excellent.

Q. 16. Distinguish between: Systematic Risk & Unsystematic Risk.
[June 2016 (4 Marks)], [June 2019 (4 Marks)]

Ans. Following are the main points of difference between systematic risk & unsystematic risk:

Points	Systematic Risk	Unsystematic Risk
Meaning	Those forces that are uncontrollable, external and broad in their effect are called sources of systematic risk.	Controllable, internal factors which are peculiar to a particular industry or firms are known as unsystematic risk.
Other name	It is called portfolio risk or market risk.	It is also called specific risk.
Nature	Systematic Risk is uncontrollable.	Unsystematic Risk is controllable.
Factors	Systematic Risk arises due to external factors.	Unsystematic Risk arises due to internal factors.
Formula	Systematic risk = Beta \times SD of market	Unsystematic risk = Total risk - Systematic risk

Q. 17. Explain the statement "Higher the return the higher will be the risk".
[Dec. 2017 (4 Marks)]

Ans. Higher return should be expected by those who are willing to bear higher risk. If any investor is not willing to go for higher risk, he should invest in risk-free securities like government securities and should not expect higher returns. There are two parts of return from investment - risk free return and risk premium. It is the premium that enhances the return from investment. Risk premium is the function of risk. It changes in the direct proportion to risk. Total risk is the summation of systematic risk and unsystematic risk.

As per Capital Asset Pricing Model (CAPM), unsystematic risk can be diversified away but systematic risk, on the other hand cannot be diversified away without cost. In other words, investors need to be compensated by a certain risk premium for bearing systematic risk.

As per CAPM,

$$ER = R_f + \beta (R_m - R_f)$$

Where,

ER is expected return

R_f is risk free rate

R_m is Expected return on market portfolio

β is systematic risk coefficient

ER = Risk-free rate of return + Risk premium specific to asset

In this way, if an investor is expecting higher return, he must be ready to take higher risk.

Q. 18. The efficient market hypothesis supports the assumption of supremacy to market forces. Comment.
[June 2018 (5 Marks)]

Ans. Efficient Market Hypothesis accords supremacy to market forces. A market is treated as efficient when all known information is immediately discounted by all investors and

reflected in share prices. In such a situation, the only price changes that occur are those resulting from new information. Since new information is generated on a random basis, the subsequent price changes also happen on a random basis. Major requirements for an efficient securities market are:

- (a) Prices must be efficient so that new inventions and better products will cause a firm's securities prices to rise and motivate investors to buy the stocks.
- (b) Information must be discussed freely and quickly across the nations so that all investors can react to the new information.
- (c) Transaction costs such as brokerage on sale and purchase of securities are ignored.
- (d) Taxes are assumed to have no noticeable effect on investment policy.
- (e) Every investor has similar access to investible funds at the same terms and conditions.
- (f) Investors are rational and make investments in the securities providing maximum yield.

Q. 19. Explain the components of the total risk of a security. Provide necessary examples for each component of risks. [June 2019 (5 Marks)]

Ans. Total risk of a security comprises two components:

Systematic Risk/Non-Diversifiable Risk: Systematic risk is the risk which is caused by factors beyond the control of specific company, such as general factors in the market, GDP, inflation, interest rates, tax policy, government policy, etc. These factors affect all the companies and cause variability in their returns. Systematic risk cannot be reduced by holding an efficiently diversified portfolio. Therefore, systematic risk is that part of total risk which cannot be eliminated by diversification. However, the systematic risk may be managed by ensuring that the portfolio includes variety asset classes, like fixed income, cash and real estate, each of which will react differently in the event of a major systemic change.

Systematic risk of a security is indicated by beta coefficient (β).

β captures the sensitivity of a security's return with respect to market return.

Unsystematic Risk/Diversifiable Risk: It is that part of total risk which is diversifiable. It is caused by factors which are within the control of a specific company, such as management, operational efficiency, labour conditions and financial leverage. The sources of unsystematic risk are business risk and financial risk. Securities which are less than perfectly and positively correlated can be combined together to diversify away unsystematic risk.

It can be observed that unsystematic risk can be reduced to zero in an efficiently diversified portfolio; hence the only relevant risk in such a portfolio is systematic risk.

As per CAPM there is a linear and positive relationship between expected return and systematic risk measured by β . CAPM is used to estimate expected return from a security or portfolio. β measures the sensitivity of a security's returns to the return of market portfolio. Some securities are less sensitive while others are more. Hence β of different securities and portfolios are also different.

Moreover, unsystematic risk of a security can be diversified away, hence investor will not receive any return or risk premium for bearing unsystematic risk. The investor will receive risk premium only for the systematic risk identified by β .

Q. 20. Distinguish between: 'Semi-strong form' and 'Strong form' of efficient market hypothesis. [June 2021 (4 Marks)]

Ans. The efficient-market theory is considered as having three forms, viz. Weak Form, Semi-strong Form and the Strong Form.

Semi-strong Form Theory: This form says that the current share valuation is a reflection of historical information plus publicly available knowledge about the company.

It maintains that as soon as the information becomes publicly available, it is absorbed and reflected in current prices. An analyst and an investor are similarly placed insofar as making use of the information is concerned. Thus an analyst cannot obtain better returns than an ordinary investor.

Strong Form Theory: According to this form, not only is the publicly available information useless to the analyst or the investor, but all information is useless. No information, whether public or inside information can be used to earn better returns than the market.

Q. 21. Explain how the Sharpe Index Model is different from Multi Index Models. [June 2021 (4 Marks)]

Ans. The Sharpe single index model imposes restrictions on how security returns can covary. In particular, it is assumed that all covariance arises through an index. This leads to a dramatic reduction in complexity.

The multi index model assumes a return generating process that is a linear function of many factors. In this approach each factor is a source of systematic risk. Since investors cannot diversify systematic risk, they are assumed to be compensated for bearing this risk.

As a result a security's sensitivity to each factor affects the assumed return generating process for the security. This sensitivity is captured by a beta factor.

The last term is the source of idiosyncratic or diversifiable risk. Except for the factor that multiple factors make this a richer model than the single index model, the use of a multi factor model is similar to the single index model.

PROBLEMS & SOLUTIONS

Problem No. 1] Your client is holding following securities as proxy of market portfolio:

Particulars of securities	Purchase Price (₹)	Dividends (₹)	Expected Market Price after 1 year (₹)	BETA β
Equity shares:				
Company-A	8,000	800	8,200	0.80
Company-B	10,000	800	10,500	0.70
Company-C	16,000	800	22,000	0.50
PSU bonds	34,000	3,400	32,300	1.00

Assume a risk free rate of 15%.

Calculate expected rate of return in each, using capital asset pricing model if shares are held for 1 year. [June 2014 (4 Marks)]. [Dec. 2017 (4 Marks)]

Ans.

Calculation of expected rate of return on market portfolio:

Particulars	Initial price (₹)	Dividends (₹)	Capital gain (₹)
<i>Equity shares:</i>			
Company-A	8,000	800	200
Company-B	10,000	800	500
Company-C	16,000	800	6,000
PSU bonds	34,000	3,400	(1,700)
	68,000	5,800	5,000

$$\frac{\text{Dividend} + \text{Capital gain}}{\text{Initial price}} \times 100 = \frac{5,800 + 5,000}{68,000} \times 100 = 15.88\%$$

Expected rate of return on individual security using CAPM:

$$ER = R_f + \beta (R_m - R_f)$$

$$\text{Company-A} = 15 + 0.8 (15.88 - 15) = 15.704\%$$

$$\text{Company-B} = 15 + 0.7 (15.88 - 15) = 15.616\%$$

$$\text{Company-C} = 15 + 0.5 (15.88 - 15) = 15.44\%$$

$$\text{PSU bonds} = 15 + 1.00 (15.88 - 15) = 15.88\%$$

Calculation of average return of portfolio:

$$\frac{15.704 + 15.616 + 15.44 + 15.88}{4} = 15.66\%$$

Problem No. 2] Zebra Ltd. has a beta (β) of 1.15. The return on market portfolio is 14%. What would be the expected rate of return on the shares of Zebra Ltd., if the risk-free rate of return is 5%? What are the implications? Also compute the alpha, if the actual rates of returns over 4 observations are as under:

Year	Year 1	Year 2	Year 3	Year 4	
Return on Zebra (%)	18.33	12.65	15.35	16.57	[Dec. 2014 (4 Marks)]

Ans.

$$\begin{aligned} ER &= R_f + \beta (R_m - R_f) \\ &= 5 + 1.15 (14 - 5) \\ &= 15.35\% \end{aligned}$$

Actual Return	Required return as per CAPM	Alpha Value (α)	Strategy	Reason
18.33%	15.35%	2.98	Buy	Security is undervalued
12.65%	15.35%	-2.70	Sell	Security is overvalued
15.35%	15.35%	0	Hold	Security is correctly valued
16.57%	15.35%	1.22	Buy	Security is undervalued

Problem No. 3] Following particulars about four corporate securities are available:

Security	Today's Price (₹)	Predicted Price after one year (₹)	Expected dividend during coming year (₹)	Beta Estimates (β)
A	490	580	7.0	1.4
B	180	200	7.0	1.2
C	570	640	5.0	1.0
D	220	245	6.0	0.5

Expected rate of return in the market is 14% and the risk-free rate of return is 8%. You are required to calculate for each security —

- The estimated return based on the CAPM model and
- Predicted return.

[Dec. 2014 (10 Marks)]

Ans. Calculation of expected rate of return on market portfolio:

Security	Initial price (₹)	Dividends (₹)	Capital gain (₹)
A	490	7.0	90
B	180	7.0	20
C	570	5.0	70
D	220	6.0	25
	1,460	25.0	205

$$\frac{\text{Dividend} + \text{Capital gain}}{\text{Initial price}} \times 100 = \frac{25 + 205}{1,460} \times 100 = 15.75\%$$

Expected rate of return on individual security using CAPM:

$$ER = R_f + \beta (R_m - R_f)$$

$$A = 8 + 1.4 (14 - 8) = 16.4\%$$

$$B = 8 + 1.2 (14 - 8) = 15.2\%$$

$$C = 8 + 1.0 (14 - 8) = 14.0\%$$

$$D = 8 + 0.5 (14 - 8) = 11.0\%$$

Problem No. 4] Return on Lucky Ltd.'s shares has a standard deviation of 22%, as against the standard deviation of the market at 12%. The correlation co-efficient between market and stock of Lucky Ltd. is 0.7%.

Compute the Beta (β) value, systematic risk and unsystematic risk of Lucky Ltd.'s shares.

[June 2015 (4 Marks)]

Ans.

$$\beta = \frac{\sigma_s}{\sigma_M} \times \text{CORR}_{SM}$$

$$= \frac{22}{12} \times 0.7$$

$$= 1.2833$$

Systematic risk = Beta \times SD of market

$$= \beta \times \sigma_M$$

$$= 1.2833 \times 12$$

$$= 15.4\%$$

Unsystematic risk = Total risk - Systematic risk

$$= 22 - 15.4$$

$$= 6.6\%$$

Problem No. 5] In a portfolio of the company, ₹2,00,000 have been invested in Asset-X which has an expected return of 8.5%, ₹2,80,000 in Asset-Y, which has an expected return of 10.2% and ₹3,20,000 in Asset-Z which has an expected return of 12%.

What is the expected return for the portfolio?

[Dec. 2015 (4 Marks)]

Ans.

Asset	₹	Weight	Return	'Product
X	2,00,000	25%	8.5	212.5
Y	2,80,000	35%	10.2	357.0
Z	3,20,000	40%	12	480.0
	8,00,000	100%		1,049.5

$$\text{Expected return for the portfolio} = \frac{1,049.5}{100} = 10.495\%$$

Problem No. 6] Kareena Softwares, a technology firm, has three divisions with the following characteristics:

Division	Beta	Market Value (₹ in lakh)
Personal computers	1.40	120
Software	1.90	160
Computer mainframes	1.00	260
Total		<u>540</u>

You are required to answer the following -

- What is *beta* of the equity of the firm?
- What would happen to the *beta* of equity if the firm divested itself of its software business?

If you were asked to value the software business for the divestiture, which *beta* would you use in your valuation? Restrict calculations to two decimal points.

[June 2016 (4 Marks)]

Ans.
Computation of beta:

Division	Market Value (₹ in lakh)	Weight	Beta	Product
Personal computers	120	22.22%	1.40	31.11
Software	160	29.63%	1.90	56.30
Computer mainframes	260	48.15%	1.00	48.15
Total	540	100%		135.56

Beta of the equity of the firm = $\frac{135.56}{100} = 1.3556$

Beta of equity if the firm divested itself of its software business:

Division	Market Value (₹ in lakh)	Weight	Beta	Product
Personal computers	120	31.58%	1.40	44.21
Computer mainframes	260	68.42%	1.00	68.42
Total	380	100%		112.63

New beta of the firm after disinvestment in software business = $\frac{112.63}{100} = 1.1263$

To value the software business for the divestiture, beta 1.9 would be used for valuation.

Problem No. 7] The following data relate to two securities, A and B:

	A	B
Expected return	22%	17%
Beta factor (β)	1.5	0.7

Assume $R_F = 10\%$ and $R_M = 18\%$.

Find out whether the securities, A and B are correctly priced?

[Dec. 2016 (4 Marks)]

Ans.

$ER_A = R_f + \beta (R_m - R_f)$ $= 10 + 1.5 (18 - 10)$ $= 22\%$	$ER_B = R_f + \beta (R_m - R_f)$ $= 10 + 0.7 (18 - 10)$ $= 15.6\%$
--	--

Security	Required return as per CAPM	Expected Return	Strategy	Reason
A	22%	22%	Hold	As security is correctly valued
B	15.6%	17%	Buy	As security is undervalued

Problem No. 8] The following information is available in respect of Security-X and Security-Y:

Security	β	Expected Rate of Return
X	1.8	22.00%
Y	1.6	20.40%

Rate of return of market portfolio is 15.3%. If risk-free rate of return is 7%, are these securities correctly priced? What would be the risk-free rate of return, if they are correctly priced?
[June 2017 (8 Marks)]

Ans.

$$\begin{aligned} ER_X &= R_f + \beta (R_m - R_f) \\ &= 7 + 1.8 (15.3 - 7) \\ &= 21.94\% \end{aligned}$$

$$\begin{aligned} ER_Y &= R_f + \beta (R_m - R_f) \\ &= 7 + 1.6 (15.3 - 7) \\ &= 20.28\% \end{aligned}$$

Computation of alpha value:

Security	Actual Return	Required return as per CAPM	Deviation α
X	22.00	21.94	0.06
Y	20.40	20.28	0.12

Alpha value is positive for both securities and hence securities are undervalued. Such security should be bought.

Computation of risk free rate so that securities are correctly priced.

Let the R_f be 'x'.

$ER_X = R_f + \beta (R_m - R_f)$	$ER_Y = R_f + \beta (R_m - R_f)$
$22 = x + 1.8 (R_m - R_f)$	$20.40 = x + 1.6 (R_m - R_f)$
$\frac{22 - x}{1.8} = (R_m - R_f)$	$\frac{20.4 - x}{1.6} = (R_m - R_f)$

$$\frac{22 - x}{1.8} = \frac{20.4 - x}{1.6}$$

$$35.2 - 1.6x = 36.72 - 1.8x$$

$$-1.52 = -0.2x$$

$$x = 7.6$$

Therefore, both securities would be correctly valued when the risk free rate of return is 7.6%

Problem No. 9] King has purchased a bond for ₹1,000 with a coupon payment of ₹250 and sold for ₹1,200.

(i) What is the holding return of King?

(ii) If King sells the bond for ₹800 after receiving the ₹250 as coupon payment, then what is the holding return of King?
[June 2017 (4 Marks)]

Ans.

$$\text{Holding period return} = \frac{(P_1 - P_0) + I}{P_0} \times 100 = 15.55\%$$

$$(i) \text{ Holding period return} = \frac{(1,200 - 1,000) + 250}{1,000} \times 100 = 45\%$$

$$(ii) \text{ Holding period return} = \frac{(800 - 1,000) + 250}{1,000} \times 100 = 5\%$$

Problem No. 10] From the information related to annual return earned by investor's through investment in the shares of Pink Ltd.; and also the return earned by investors' community at large from index rate movements in the recognized stock exchange; compute the beta value of Pink Ltd.

Year	Return on Shares of Pink Ltd. (%)	Return earned by Investors Community (%)
2012	14.00	6.00
2013	21.00	8.00
2014	(6.00)	(2.00)
2015	4.00	12.00
2016	20.00	14.00
2017	19.00	16.00

[June 2013 (4 Marks)]

Ans.

Method 1:

$$\beta = \frac{\sum XY - n \bar{X} \bar{Y}}{\sum Y^2 - n \bar{Y}^2}$$

X	Y	XY	Y ²
14	6	84	36
21	8	168	64
(6)	(2)	12	4
4	12	48	144
20	14	280	196
19	16	304	256
$\bar{X} = 12$	$\bar{Y} = 9$	$\sum XY = 896$	$\sum Y^2 = 700$

$$\beta = \frac{\sum XY - n \bar{X} \bar{Y}}{\sum Y^2 - n \bar{Y}^2} = \frac{896 - 6 \times 12 \times 9}{700 - 6 \times 81} = \frac{248}{214} = 1.16$$

Method 2:

Alternatively, beta can be calculated using following formula:

$$\beta = \frac{\text{Cov}_{SM}}{(\sigma_M)^2}$$

Calculation of covariance between Security & Market:

P	D _S	D _M	P × D _S × D _M
0.1667	2	(3)	(1)
0.1667	9	(1)	(1.5)
0.1666	(18)	(11)	32.99
0.1667	(8)	3	(4)
0.1667	8	5	6.67
0.1666	7	7	8.16
			Cov_{SM} = 41.32

Calculation of variance of market:

R	D	D ²	P	PD ²
6	(3)	9	0.1667	1.5
8	(1)	1	0.1667	0.17
(2)	(11)	121	0.1666	20.16
12	3	9	0.1667	1.5
14	5	25	0.1667	4.17
16	7	49	0.1666	8.16
$\bar{Y} = 9$				$\sigma^2 = 35.66$
				$\sigma = 5.97\%$

$$\beta = \frac{\text{Cov}_{SM}}{(\sigma_M)^2} = \frac{41.32}{35.66} = 1.16$$

Method 3: *Alternatively, beta can be calculated using following formula:*

$$\beta = \frac{\sigma_S}{\sigma_M} \times \text{CORR}_{SM}$$

Calculation of standard deviation of security:

R	D	D ²	P	PD ²
14	2	4	0.1667	1
21	9	81	0.1667	13.50
(6)	(18)	324	0.1666	53.98
4	(8)	64	0.1667	10.67
20	8	64	0.1667	10.67
19	7	49	0.1666	8.16
$\bar{X} = 12$				$\sigma^2 = 97.98$
				$\sigma = 9.99\%$

$$\text{Corr}_{SM} = \frac{\text{COV}_{SM}}{\sigma_S \times \sigma_M} = \frac{41.32}{9.99 \times 5.97} = \frac{41.32}{59.64} = 0.6928$$

$$\beta = \frac{\sigma_S}{\sigma_M} \times \text{Corr}_{SM} = \frac{9.99}{5.97} \times 0.6928 = 1.16$$

Problem No. 11] Aarvi, a portfolio manager of WX Mutual Fund coordinates and take all necessary decisions to provide the sufficient return to the investors' of fund. The following information is available with respect to the portfolio created and managed by her:

- (1) Risk free rate of interest generally applicable in an economy is 8%.
- (2) Expected market return by investing community is 14%.
- (3) Standard deviation of assets deployed by fund is 3.0%.
- (4) Standard deviation registered and normally recorded by market is 4%.
- (5) Correlation coefficient of portfolio of fund with market is 1%.

From the above information, calculate the expected rate of return of portfolio.

[June 2018 (3 Marks)]

Ans.

$$\beta = \frac{\sigma_S}{\sigma_M} \times \text{Corr}_{SM} = \frac{3}{4} \times 1 = 0.75$$

Calculation of required return on the security:

$$\begin{aligned} ER &= R_f + \beta (R_m - R_f) \\ &= 8 + 0.75 (14 - 8) \\ &= 12.5\% \end{aligned}$$

Problem No. 12] Raj has recently created his portfolio and he has provided the information given below:

Security	Amount Invested (₹)	Expected Return (%)	Beta
Stock A	10,000	8	0.80
Stock B	20,000	12	0.95
Stock C	30,000	15	1.10
Stock D	40,000	18	1.40

Calculate his expected return from this portfolio. What is the beta of this portfolio? Comment on this portfolio also.

[Dec. 2018 (4 Marks)]

Ans.

Calculation of expected return of portfolio:

Security	₹	Weight	Expected Return (%)	Product
Stock A	10,000	10%	8%	80
Stock B	20,000	20%	12%	240
Stock C	30,000	30%	15%	450
Stock D	40,000	40%	18%	720
	1,00,000	100%		1,490

Portfolio Return = Weighted Return = $1,490/100 = 14.90\%$

Calculation of beta of portfolio:

Security	₹	Weight	β	Product
Stock A	10,000	10%	0.80	8
Stock B	20,000	20%	0.95	19
Stock C	30,000	30%	1.10	33
Stock D	40,000	40%	1.40	56
	1,00,000	100%		116

Portfolio beta = Weighted beta = $\beta = 116/100 = 1.16$

Problem No. 13] Apple Ltd. and Banana Ltd. have been paying a dividend of ₹ 64 per share each year to their shareholders. Beta coefficient of these two companies is 1.25 and 1.40 respectively. If the risk free return is 6% and market return is 10%, what is the prediction about share price of these two entities?

[June 2019 (4 Marks)]

Ans.

Expected return of Apple Ltd.: $ER = R_f + \beta (R_m - R_f)$ $= 6 + 1.25 (10 - 6)$ $= 11\%$	Prediction of price of Apple Ltd.: $P_0 = \frac{D}{K_e}$ $= \frac{64}{0.11}$ $= 581.82$
Expected return of Banana Ltd.: $ER = R_f + \beta (R_m - R_f)$ $= 6 + 1.40 (10 - 6)$ $= 11.6\%$	Prediction of price of Banana Ltd.: $P_0 = \frac{D}{K_e}$ $= \frac{64}{0.116}$ $= 551.72$

Problem No. 14] A portfolio manager has the following five stocks in his portfolio:

Security	No. of Shares	Price/Share (₹)	Beta
A	10,000	50	1.2
B	5,000	20	2.0
C	8,000	25	0.7
D	1,000	100	1.0
E	500	200	1.3

Required:

- (a) Calculate Portfolio Beta.
 (b) If the manager wants to reduce the beta to 0.8, how much of risk free investment should he bring in? What will be the new portfolio?

[June 2019 (4 Marks)]

Ans.

Security	Total Market Value (₹)	Weight	β	Product
A	5,00,000	50%	1.2	0.6
B	1,00,000	10%	2.0	0.2
C	2,00,000	20%	0.7	0.14
D	1,00,000	10%	1.0	0.1
E	1,00,000	10%	1.3	0.13
	10,00,000	100%		1.17

Portfolio beta = Weighted beta = $\beta = 1.17$

To reduce the beta from 1.17 to 0.8, the portfolio manager may sell off a portion of the portfolio and use the proceeds to buy the risk free securities.

Let the percentage investment in Existing Portfolio = x

Thus percentage investment in risk free securities = $(1 - x)$

Beta of risk free security = 0 [zero]

Beta of Portfolio = $[x \times 1.17] + [(1 - x) \times 0] = 0.8$

$1.17x = 0.8$

$x = 0.6838$ i.e. 68.38%

Thus,

Weight of Existing Portfolio = 68.38%

Weight of risk free securities = 31.62% (100 - 68.38)

Conclusion: This implies that a portfolio consisting of ₹ 6,83,800 ($0.6838 \times 10,00,000$) invested in the 5 securities and ₹ 3,16,200 in risk free securities will have a beta of 0.8.

Problem No. 15] As an Investment manager, you are given the following information:

Investment in equity share of	Expected Return (%)	Standard Deviation (%)	Beta
A Ltd.	22%	40%	0.86
B Ltd.	24%	38%	1.24

The correlation coefficient between the returns of two stocks is 0.72. The standard deviation of the market return is 20%.

Required:

- Is investing in B Ltd. better than A Ltd.?
 - If you invest 70% in A Ltd. and 30% in B Ltd., what is your expected rate of return and standard deviation?
 - What is the rate of return on market portfolio and what is risk-free rate?
 - What is beta of portfolio, if weights of A Ltd. and B Ltd. are 70% and 30% respectively?
- [June 2019 (8 Marks)]

Ans.

(i)

Particulars	A Ltd.	B Ltd.
Expected return	22%	24%
Standard deviation	40%	38%

A Ltd. has lower return and carries high risk as compared to B Ltd. Hence, investing in B Ltd. is better than investing in A Ltd.

(ii) **Investing 30% in B Ltd. and 70% in A Ltd.:**

$$\text{Expected return} = (22 \times 70\%) + (24 \times 30\%) = 22.6\%$$

$$\text{Corr}_{AB} = \frac{\text{Cov}_{AB}}{\sigma_A \times \sigma_B}$$

$$0.72 = \frac{\text{Cov}_{AB}}{40 \times 38}$$

$$\text{Cov}_{AB} = 0.72 \times 40 \times 38 = 1,094.4$$

		A	B
		0.7	0.3
A	0.7	1,600	1,094.4
B	0.3	1,094.4	1,444

1	$0.7 \times 0.7 \times 1,600$	=	784.00
2	$0.7 \times 0.3 \times 1,094.4$	=	229.82
3	$0.3 \times 0.7 \times 1,094.4$	=	229.82
4	$0.3 \times 0.3 \times 1,444$	=	129.96
	$\sigma^2 =$		<u>1,373.60</u>
	$\sigma =$		37.06%

Alternatively portfolio risk can be calculated by using formula method as follows:

$$\sqrt{(\sigma_A)^2 \times (W_A)^2 + (\sigma_B)^2 \times (W_B)^2 + [2 \times \sigma_A \times W_A \times \sigma_B \times W_B \times \text{Corr}_{AB}]}$$

$$\sqrt{1,600 \times 0.49 + 1,444 \times 0.09 + [2 \times 40 \times 0.7 \times 38 \times 0.3 \times 0.72]}$$

$$\sqrt{784 + 129.96 + 459.65}$$

$$\sqrt{1,373.61}$$

Portfolio risk = $\sigma = 37.06\%$

(iii) Calculation of risk free rate of return:

Let the be R_f 'x' and $(R_m - R_f)$ be 'y'

$ER_A = R_f + \beta (R_m - R_f)$	$ER_B = R_f + \beta (R_m - R_f)$
$22 = x + 0.86 \times y$	$24 = x + 1.24 \times y$
$22 = x + 0.86y$	$24 = x + 1.24y$

$$22 = x + 0.86y$$

$$24 = x + 1.24y$$

$$-2 = -0.38y$$

$$y = 2/0.38 = 5.2632$$

$$y = R_m - R_f = 5.2632$$

Putting value of 'y' in first equation we can get value of 'x'.

$$22 = x + 0.86y$$

$$22 = x + 0.86 \times 5.2632$$

$$22 = x + 4.5264$$

$$x = \text{Risk free rate} = 17.47\%$$

Calculation market rate of return:

$$R_m - R_f = 5.2632$$

$$R_m - 17.47 = 5.2632$$

$$R_m = 22.73\%$$

(iv) Calculation of beta of portfolio if A Ltd.'s weight is 70% and B Ltd.'s weight is 30%:

$$(0.86 \times 0.7) + (1.24 \times 0.3) = 0.974$$

Problem No. 16] Security-A offers an expected rate of return of 14% with a standard deviation of 8%. Security-B offers an expected rate of return of 11% with a standard deviation of 6%. If an investor wishes to construct a portfolio with a 12.8% expected return, what percentage of the portfolio will consist of Security-A?

[Dec. 2020 (4 Marks)]

Ans. Weight of Security A = x

Weight of Security B = (1 - x)

Expected return of the portfolio = $[x \times 0.14] + [(1 - x) \times 0.11] = 0.128$

$$0.14x + 0.11 - 0.11x = 0.128$$

$$0.03x + 0.11 = 0.128$$

18.24

$$0.03x = 0.018$$

$$x = 0.6 \text{ i.e. } 60\%$$

Thus, investment in Security A is 60% and in Security B is 40%.

Problem No. 17] A Portfolio Manager (PM) has the following four stocks in his portfolio:

Security	No. of Shares	Market Price Per Share (₹)	Beta
Dahlia Ltd.	10,000	50	0.9
Rose Ltd.	5,000	20	1.0
Cauliflower Ltd.	8,000	25	1.5
Apples Ltd.	2,000	200	1.2

Compute the following:

- Portfolio beta
- If the PM seeks to reduce the beta to 0.8, how much risk free investment should he bring in?
- If the PM seeks to increase the beta to 1.2, how much risk free investment should he bring in?

[Dec. 2020 (4 Marks)]

Ans.

Security	Total Market Value (₹)	Weight	β	Product
Dahlia Ltd.	5,00,000	41.67%	0.9	0.3750
Rose Ltd.	1,00,000	8.33%	1.0	0.0833
Cauliflower Ltd.	2,00,000	16.67%	1.5	0.2501
Apples Ltd.	4,00,000	33.33%	1.2	0.4000
	12,00,000	100%		1.1084

$$\text{Portfolio beta} = \text{Weighted beta} = \beta = 1.1084$$

Reduction of beta to 0.8:

To reduce the beta from 1.1084 to 0.8, the portfolio manager may sell off a portion of the portfolio and use the proceeds to buy the risk free securities.

Let the percentage investment in Existing Portfolio = x

Thus percentage investment in risk free securities = $(1 - x)$

Beta of risk free security = 0 [zero]

$$\text{Beta of Portfolio} = [x \times 1.17] + [(1 - x) \times 0] = 0.8$$

$$1.1084x = 0.8$$

$$x = 0.7218 \text{ i.e. } 72.18\%$$

Thus,

Weight of Existing Portfolio = 72.18%

Weight of risk free securities = 27.82% (100 - 72.18)

Conclusion: This implies that a portfolio consisting of ₹ 8,66,160 (12,00,000 × 72.18%) invested in the 4 securities and ₹ 3,33,840 in risk free securities will have a beta of 0.8.

Increase in beta to 1.2:

Let the percentage investment in Existing Portfolio = x

Thus percentage investment in risk free securities = $(1 - x)$

Beta of risk free security = 0 [zero]

Beta of Portfolio = $[x \times 1.17] + [(1 - x) \times 0] = 1.2$

$$1.1084x = 1.2$$

$$x = 1.0826 \text{ i.e. } 108.26\%$$

Thus,

Weight of Existing Portfolio = 108.26%

Weight of risk free securities = - 8.26% (100 - 108.26)

Conclusion: The portfolio manager should borrow ₹ 99,120 ($12,00,000 \times 8.26\%$) at the risk free rate and invest total funds ₹ 12,99,120 in the four securities.

Problem No. 18] From the following information, calculate the expected rate of return of a portfolio:

Risk-free rate of return	12% p.a.
Expected return on market portfolio	20% p.a.
Standard deviation of an asset	3%
Market standard deviation	2.5%
Correlation coefficient of portfolio with market	0.80

[June 2021 (4 Marks)]

Ans.

$$\beta = \frac{\sigma_a}{\sigma_m} \times \text{Corr}_{am} = \frac{3}{2.5} \times 0.8 = 0.96$$

Calculation of required return of security:

$$\begin{aligned} ER &= R_f + \beta (R_m - R_f) \\ &= 12 + 0.96 (20 - 12) \\ &= 19.68\% \end{aligned}$$

Problem No. 19] Following particulars about four corporate securities (shares) are available:

Security	Today's Price (₹)	Predicted Price after one year (₹)	Expected Dividend during coming year (₹)	Beta estimates (β)
A	490	580	7.0	1.4
B	180	200	7.0	1.2
C	570	640	5.0	1.0
D	220	245	6.0	0.5

Expected rate of return in the market is 14% and the risk-free rate of return is 8%. You are required to calculate for each security:

- The estimated return based on the Capital Asset Pricing Model (CAPM), and
 - Predicted Return.
- Also state, whether the securities are undervalued or overvalued.

[June 2021 (8 Marks)]

Ans.

Expected rate of return on individual security using CAPM:

$$ER = R_f + \beta (R_m - R_f)$$

$$A = 8 + 1.4 (14 - 8) = 16.40\%$$

$$B = 8 + 1.2 (14 - 8) = 15.20\%$$

$$C = 8 + 1.0 (14 - 8) = 14.00\%$$

$$D = 8 + 0.5 (14 - 8) = 11.00\%$$

Predicted Return:

$$R = \frac{(P_1 - P_0) + D}{P_0} \times 100$$

$$A = \frac{(580 - 490) + 7}{490} \times 100 = 19.80\%$$

$$B = \frac{(200 - 180) + 7}{180} \times 100 = 15.00\%$$

$$C = \frac{(640 - 570) + 5}{570} \times 100 = 13.16\%$$

$$D = \frac{(245 - 220) + 6}{220} \times 100 = 14.09\%$$

Security	Required return as per CAPM	Predicted Return	Reason
A	16.40%	19.80%	Security is undervalued
B	15.20%	15.00%	Security is overvalued
C	14.00%	13.16%	Security is overvalued
D	11.00%	14.09%	Security is undervalued

Problem No. 20] In the context of CAPM, what is the expected return of security 'J' if it has the following characteristics and if the following information holds for the market portfolio?

Standard Deviation, Security J	0.20
Standard Deviation, market portfolio	0.15
Expected Return, market portfolio	0.13
Co-relation between possible returns for Security J and the market portfolio	0.80
Risk Free Rate of Return	0.07

You are required to comment:

- What would happen to the required return if the standard deviation for the security were higher?
- What would happen if the correlation co-efficient were less?
- What is the functional relationship between the required return for a security and market risk?

[Dec. 2021 (4 Marks)]

Ans.

$$\beta = \frac{\sigma_s}{\sigma_m} \times \text{Corr}_{sm} = \frac{0.20}{0.15} \times 0.8 = 1.06$$

Calculation of required return of security:

$$\begin{aligned} \text{ER} &= R_f + \beta (R_m - R_f) \\ &= 7 + 1.06 (13 - 7) \\ &= 13.36\% \end{aligned}$$

- (a) If the standard deviation for the security is higher, Expected Return (ER) will be increase.

Thus, if we increase standard deviation of security from 0.20 to 0.25, ER increases to 14.98%

$$\beta = \frac{\sigma_s}{\sigma_m} \times \text{Corr}_{sm} = \frac{0.25}{0.15} \times 0.8 = 1.33$$

$$\begin{aligned} \text{ER} &= R_f + \beta (R_m - R_f) \\ &= 7 + 1.33 (13 - 7) \\ &= 14.98\% \end{aligned}$$

- (b) If the correlation co-efficient decreases, the ER will decrease. Thus, if we decrease correlation co-efficient from 0.80 to 0.70, ER increases to %

$$\beta = \frac{\sigma_s}{\sigma_m} \times \text{Corr}_{sm} = \frac{0.20}{0.15} \times 0.70 = 0.93$$

$$\begin{aligned} \text{ER} &= R_f + \beta (R_m - R_f) \\ &= 7 + 0.93 (13 - 7) \\ &= 12.58\% \end{aligned}$$

- (c) If standard deviation $[\sigma]$ is higher, the expected return would increase and if standard deviation $[\sigma]$ is low, the expected return would decrease. Therefore, the required return for a security is directly proportional to market risk.

19 CHAPTER

OPERATIONAL APPROACH TO FINANCIAL DECISION

THEORETICAL QUESTIONS

Q. 1. "The technique of marginal cost can be a valuable aid to management". Discuss. [June 1999 (5 Marks)]

Or

Write a short note on: Make or buy decisions. [June 2011 (3 Marks)]

Ans. Marginal costing helps the management in decision-making in respect of the following vital areas:

- (1) **Make or Buy decision:** The decision is to be taken whether to manufacture a product or component within the organization or buy it from outside supplier.
- (2) **Expand or contract:** When capacity is limited, additional machinery is acquired and component is produced, if it is cheaper compared to buying it from outside.
- (3) **Comparing machines and hand labour:** Products manufactured by hand labour may be cheaper. But, Machines may produce the products on a mass scale. Taking the interest as opportunity cost and depreciation into consideration, the total cost per unit of output may still be lower than that of the hand product. Then, installation of machines will be profitable. Likewise, decisions may be taken by the management.
- (4) **Replacement of existing machinery by new and improved ones:** The differential cost or savings in the cost and incremental revenue will play an important role in taking such decisions.
- (5) **Diversification of products:** Management may think of introducing a product to utilizes the idle capacity or capture a new market provided it fetches the profit after meeting the variable cost and specific fixed costs, if any, relating to the new product.
- (6) **Product mix, profit planning and profit maximization:** A product which is incurring losses or having low P/V ratio is discontinued and another product with high P/V ratio is introduced so that such product-mix will improve the profitability. To achieve this objective, the factors such as, selling price, sale volume, cost control, product-mix, etc., are to be studied carefully and decision is to be taken.
- (7) **Price:** In order to earn foreign exchange and goodwill in the foreign market, any price over and above the marginal cost is generally accepted though it is very much lower than the indigenous prices.

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- (8) **Suspending activities**, i.e. closing down the factory for a temporary period or to run the operations at a loss.
- (9) Determination of selling price, sales volume and desired profit.
- (10) Determination of optimum output level.
- (11) Decision making and profit maximization based on the key factor.
- (12) Cost control and to find out break-even point.

Q. 2. What is Margin of safety? How may it be improved?

[June 1999 (3 Marks)], [June 2000 (5 Marks)],
[Dec. 2009 (3 Marks)]

Ans. Margin of safety is the difference between the actual sales and break-even sales. Margin of safety represents the strength of the organization. A high margin of safety gives confidence to the organization. On the other hand, an undertaking with low margin of safety may wipe off the profit and turn into a loss with a drop in sales.

Formula:

Margin of safety = Actual sales – BEP sales

$$\text{Margin of safety (Units)} = \frac{\text{Profit}}{\text{Contribution per unit}}$$

$$\text{Margin of safety (Value)} = \frac{\text{Profit}}{\text{P/V ratio}}$$

Margin of safety and BEP are complement of each other; that is to say if BEP is 60% of Sales Margin of Safety is 40% of sales and so on.

If the margin of safety is small, any fall in sales revenue may touch BEP and finally results into a loss which is a serious matter to be considered.

Improvement in Margin of Safety:

- (1) Increase in the selling price, provided the demand is inelastic so as to absorb the increased prices.
- (2) Reduction in fixed expenses.
- (3) Reduction in variable expenses.
- (4) Increasing the sales volume provided capacity is available.
- (5) Substitution or introduction of a product mix such that more profitable.

Q. 3. Write short note on: CVP Analysis.

[June 2009 (3 Marks)]

Or

Explain the significance of "break-even analysis".

[Dec. 2005 (5 Marks)]

Ans. Cost-Volume-Profit analysis is analysis of three variables i.e. cost, volume and profit which explores the relationship existing amongst costs, revenue, activity levels and the resulting profit. It aims at measuring variations of profits and costs with volume, which is significant for business profit planning.

CVP analysis makes use of principles of marginal costing. It is an important tool of planning for making short-term decisions.

CVP Analysis has the following objectives:

1. It helps to forecast the profit fairly and accurately.
2. It acts as an effective tool of profit planning to the management.
3. It helps in ascertaining the BEP of the product produced and sold.
4. It is very much useful in setting up the flexible budget, which ascertains cost, profit and sales at different levels of activity.
5. It assists the management in the process of performance evaluation for the purpose of control.
6. It helps in formulating the price policies by projecting the effect of different price structures on the costs and profits.
7. It helps in determining the amount of overhead cost to be charged to the product at different levels of operation, as overhead rates are generally predetermined on the basis of a selected volume of production.

Q. 4. "Selling price is always based on total costs". Comment.

[June 1999 (5 Marks)], [Dec. 2003 (5 Marks)]

Or

Indicate any five circumstances under which you will permit to fix a price, which is less than the marginal cost of the product.

Ans. Selling at or below marginal cost: During periods of recession or in case of competition, the firm may sell the product at or below the marginal cost. If the products are sold at marginal cost, the firm will not be able to recover the fixed costs and incur the losses to this extent. If they are sold below the marginal cost, the firm will not only be unable to recover the fixed costs but also part of the variable cost. Then, the losses will be further higher and the firm has to take action to reduce the losses. Reduction of prices even below the marginal cost may be justified for a short while due to several other reasons as indicated below:

- ◆ To introduce a new product or to popularize it.
- ◆ To eliminate the weaker competitors.
- ◆ To explore the foreign market and earn the foreign exchange.
- ◆ When there is recession in the market.
- ◆ When the employees cannot be retrenched and production is to be maintained.
- ◆ When the sale of one product will push up the sale of another co-product which is making a considerable profit.
- ◆ To dispose off perishable goods.

Q. 5. Enumerate the practical applications of profit volume ratio.

[Dec. 1999 (5 Marks)]

Ans. The Profit Volume Ratio (P/V Ratio) is the relationship between 'contribution' and 'sales'. It is also termed as 'contribution to sales ratio'.

Significance of P/V Ratio:

- (a) P/V Ratio is considered to be the basic indicator of the profitability of the business.

- (b) The higher the P/V Ratio, the better it is for a business. In the case of a firm enjoying steady business conditions over a period of years, the P/V Ratio will also remain stable and steady.
- (c) If P/V Ratio is improved, it will result in better profits.

Improvement of P/V Ratio:

- (i) P/V Ratio can be improved by the following means.
- (ii) By reducing the variable cost.
- (iii) By increasing the selling price.
- (iv) By increasing the share of products with higher P/V Ratio in the overall sales mix.

Uses of P/V Ratio:

- (1) To compute the variable costs for any volume of sales.
- (2) To measure the efficiency or to choose a most profitable line. The overall profitability of the firm can be improved by increasing the sales/output of a product giving a higher P/V ratio.
- (3) To determine break-even point and the level of output required to earn a desired profit.
- (4) To decide more profitable sales-mix.

Q. 6. Sunk costs are irrelevant for decision making. Comment.

[June 2000 (5 Marks)]

Ans. Sunk costs are historical or past costs. These are the costs, which have been created by a decision that was made in the past and cannot be changed by any decision that will be made in the future. Since sunk costs cannot be altered by later decisions, hence are irrelevant for decision-making.

Examples:

- (1) Investments in plant & machinery, buildings, etc. are prime examples of sunk costs. These costs are already incurred and no decision in future can alter or reduce these costs and that's why these costs are called sunk costs.
- (2) The marketing department conducts preliminary survey for a new product. Such costs have no relevance and hence not considered in taking decision. Hence, cost is sunk cost.

Q. 7. Costing as an aid to management. discuss.

[June 2001 (5 Marks)]

Or

Define cost accounting. Explain how does it help the management in period of trade depression and trade competition.

[June 2002 (5 Marks)]

Ans. If the Central Government is of the opinion, that it is necessary to do so, it may, by order, direct that the audit of cost records of class of companies, which are covered under section 148(1) and which have a net worth of prescribed amount or a turnover of prescribed amount, shall be conducted in the manner specified in the order. [Section 148(2)]

In most of the cases cost accounting system is installed on grounds of its benefits. Thus costing system should commensurate with the expected benefits.

Importance of cost accounting can be discussed under following heading:

(a) **Cost as an aid to management:** It provides detailed costing information to enable them to maintain effective control over various cost items. The various advantages derived by the management from a good system of costing are as follows:

- It helps in periods of trade depression and trade competition.
- It aids in price fixation.
- It helps in making estimates.
- It helps in channelling production on right lines.
- It eliminates wastages.
- It makes comparisons possible.
- It provides data for periodical P&L A/c.
- It helps in determining and enhancing efficiency.
- It helps in inventory control.

(b) **Costing as an aid to creditors:** Investors, financial institutions are interested in the success of the business concern and hence they also get benefitted by the installation of an efficient system of costing. They can base their judgment about the profitability & future prospects of the enterprise on the costing records.

(c) **Costing as an aid to employees:** Employees have interest in enterprise in which they are employed. They are benefitted by a number of ways by the installation of an efficient system of costing. They are benefitted through continuous employment and higher remuneration by way of incentives, bonus plans, etc.

(d) **Costing as an aid to national economy:** An efficient system of costing brings prosperity to the business enterprise, which in turn results in stepping up of this Govt. revenue. The overall economic development of a country takes place; as a consequence increase in efficiency of production. Control of costs, elimination of wastages and inefficiency led to the progress of the industry and, in consequence of the nation as a whole.

Q. 8. Distinguish Between: Costing & Cost Accounting. [June 2004 (2 Marks)]

Ans. Distinction between costing & cost accounting is as follows:

Costing: Costing may be defined as, "the techniques and process of ascertaining costs".

Costing involves in classification, recording, allocation, appropriation of expenses incurred to facilitate the determination of cost of the product or service.

Costing is the classifying, recording and appropriate allocation of expenditure for the determination of cost of products or services and for the presentation of suitably arranged data for purposes of control and guidance of management.

It includes the ascertainment of cost of every order, job, contract process, service units as may be appropriate.

Cost Accounting: CIMA, London defines cost accounting as, "the establishment of budgets, standard costs and actual costs of operations, processes, activities or products; and the analysis of variances, profitability or the social use of funds".

Cost accounting primarily deals with collection, analysis of relevant cost data for interpretation and presentation for various problems of management.

Q. 9. Notional cost and imputed cost means the same thing. Comment.
[June 2004 (4 Marks)]

Or

What are imputed cost and common cost? [Dec. 2003 (2 Marks)]

Ans. Imputed/notional/hypothetical costs are those costs which do not involve cash outlays. They are included in cost account and are important for taking into consideration while making management decisions.

In case two projects require unequal outlays of cash, the management must take into consideration interest on capital to judge the relative profitability of the projects.

Examples:

- (1) Interest on own capital is considered in cost accounting but ignored in financial accounts.
- (2) In similar way, when a company is working in its own building and it considers notional rent for cost computation purpose, is also an example of notional cost or imputed cost.

The British equivalent term of the American term 'Imputed Cost' is 'Notional Cost'.

Q. 10. Define explicit cost. How is it different from implicit cost?

Or

Distinguish between: Explicit & Implicit Cost. [Dec. 2007 (3 Marks)]

Ans. Explicit Costs: These costs are also known as out of pocket costs and refer to costs involving immediate payment of cash. These are also known as accounting costs. Salaries, wages, postage and telegram, printing and stationery, interest on loan etc. are some examples of explicit costs involving immediate cash payment.

Implicit Costs: These costs do not involve any immediate cash payment. They are not recorded in the books of account. They are also known as **economic costs**.

Main points of difference between explicit and implicit costs are:

Points	Explicit Costs	Implicit Costs
Meaning	These costs refer to costs involving immediate payment of cash.	These costs do not involve any immediate cash payment.
Other name	These are also known as accounting costs & out of pocket costs.	These are also known as economic costs.
Recording	They are recorded in the books of account.	They are not recorded in the books of account.

Q. 11. The assumption in break even analysis limits the accuracy of break-even point and makes unrealistic. Comment. [Dec. 2007 (4 Marks)]

Ans.

Following assumptions are made in BEP Analysis:

- ◆ All costs are divisible into fixed and variable.
- ◆ All fixed costs remain constant at all levels of output within the installed capacity.

- ◆ The variable costs vary along with production.
- ◆ The selling price is assumed to be constant.
- ◆ The volume of production influences the cost.
- ◆ There is synchronization between production and sales, which would help deciding the break-even point.

Q. 12. Distinguish between: Absorption Costing & Marginal Costing.
[June 2009 (3 Marks)]

Ans. Following are main points of distinctions between absorption costing & marginal costing:

Points	Absorption Costing	Marginal Costing
Meaning	According to CIMA, Absorption costing is a principle whereby fixed as well as variable costs are allotted to cost units.	According to CIMA, marginal costing is a principle whereby marginal costs of cost units are ascertained.
Stock valuation	Stock is valued at total cost which includes fixed cost as well.	Stock is valued at marginal cost only.
Under/over absorption	Problem of under or over absorption of fixed overheads.	No such problem in marginal costing.
Fixed cost	Fixed cost is charged to cost of production.	Fixed cost is treated as period cost. The profitability is judged by marginal cost and P/V ratio.

Q. 13. Distinguish between: Differential Costing and Marginal Costing.
[Dec. 2006 (4 Marks)]

Ans. Following are main points of distinctions between differential costing and marginal costing:

Differential Costing	Marginal Costing
It consists of variable and fixed costs.	It consists of variable cost only.
It is a change in the cost at two levels.	It is not necessary for marginal costing to have two levels for being worked out.
Differential cost analysis applied to both absorption costing and marginal costing.	Marginal costing analysis will not apply to absorption costing.
It is not different type of costing and, hence, its analysis is kept outside the books of account.	It is a different type of costing.
Difference in cost is important.	Contribution is important.
Differential revenue, differential cost and differential profit are the main yard-stick for decision-making.	Contribution, P/V ratio, contribution per key factor, CVP analysis are the main yardsticks for decision-making.

PROBLEMS & SOLUTIONS

Problem No. 1] A company is producing an identical product in two factories. The following are the details in respect of both the factories.

	Factory X	Factory Y
Selling price per unit (₹)	50	50
Variable cost per unit (₹)	40	35
Fixed cost (₹)	2,00,000	3,00,000
Depreciation included in fixed cost (₹)	40,000	30,000
Sales (units)	30,000	20,000
Production capacity (units)	40,000	30,000

You are required to determine:

- Break-Even Point (BEP) for each factory individually.
- Which factory is more profitable.
- Cash BEP for each factory individually.
- BEP for company as a whole, assuming the present product mix of Factory X & Factory Y is 3:2

Note: Indicate BEP in unit.

[Dec. 2006 (10 Marks)]

Ans.

Particulars	Factory X			Factory Y		
	p.u.	Sales	Production capacity	p.u.	Sales	Production capacity
Units		30,000	40,000		20,000	30,000
Sales	50	15,00,000	20,00,000	50	10,00,000	15,00,000
Less: Variable cost	(40)	(12,00,000)	(16,00,000)	(35)	(7,00,000)	(10,50,000)
Contribution	10	3,00,000	4,00,000	15	3,00,000	4,50,000
Less: Fixed cost		(2,00,000)	(2,00,000)		(3,00,000)	(3,00,000)
Profit		1,00,000	1,00,000		Nil	1,50,000

(i) Calculation of BEP for each factory individually:

$$P/V \text{ ratio (Factory X)} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{10}{50} \times 100 = 20\%$$

$$P/V \text{ ratio (Factory Y)} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{15}{50} \times 100 = 30\%$$

$$\text{BEP (in value) (Factory X)} = \frac{\text{Fixed cost}}{P/V \text{ ratio}} = \frac{2,00,000}{20\%} = 10,00,000$$

$$\text{BEP (in value) (Factory Y)} = \frac{\text{Fixed cost}}{P/V \text{ ratio}} = \frac{3,00,000}{30\%} = 10,00,000$$

(ii) Factory Y is more profitable because it give higher contribution per unit.

(iii) Calculation of Cash BEP for each factory individually:

Fixed cost considering non-cash fixed expenses i.e. depreciation.

$$\text{Factory X} = 2,00,000 - 40,000 = 1,60,000$$

$$\text{Factory Y} = 3,00,000 - 30,000 = 2,70,000$$

$$\text{BEP (in value) (Factory X)} = \frac{\text{Cash Fixed cost}}{P/V \text{ ratio}} = \frac{1,60,000}{20\%} = 8,00,000$$

$$\text{BEP (in value) (Factory Y)} = \frac{\text{Cash Fixed cost}}{\text{P/V ratio}} = \frac{2,70,000}{30\%} = 9,00,000$$

(iv) Calculation of BEP for company as a whole, assuming the present product mix of Factory X & Factory Y is 3:2.

Calculation of equivalent P/V ratio:

$$20\% \times 3/5 = 12\%$$

$$30\% \times 2/5 = 12\%$$

$$24\%$$

$$\text{BEP (in value)} = \frac{\text{Fixed cost}}{\text{Equivalent P/V ratio}} = \frac{5,00,000}{24\%} = 20,83,333$$

$$\text{BEP sales units} = \frac{20,83,333}{50} = 41,667$$

Problem No. 2] A company produces a single product and sells it at ₹200 each. The variable cost of the product is ₹120 per unit and the fixed cost for the year is ₹96,000.

Calculate:

- (i) P/V ratio
- (ii) Sales at break-even point
- (iii) Sales units required to earn a target net profit of ₹1,20,000.
- (iv) Sales units required to earn a target net profit of ₹1,00,000 after income tax, assuming income tax rate to be 50%.
- (v) Profit at sales of ₹7,00,000

[June 2007 (10 Marks)]

Ans.

Sales - Variable cost = Contribution p. u.

$$200 - 120 = 80$$

$$(i) \text{ P/V ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{80}{200} \times 100 = 40\%$$

$$(ii) \text{ BEP (in value)} = \frac{\text{Fixed cost}}{\text{P/V ratio}} = \frac{96,000}{40\%} = 2,40,000$$

(iii) Sales units required to earn a target net profit of ₹1,20,000:

Particulars	₹
Sales	5,40,000
Less: Variable cost	(3,24,000)
Contribution	2,16,000
Less: Fixed cost	(96,000)
Profit	1,20,000

$$\text{Sales} = \frac{2,16,000}{40\%} = 5,40,000$$

$$\text{Sales units} = \frac{5,40,000}{200} = 2,700$$

(iv) Sales units required to earn a target net profit of ₹ 1,00,000 after income tax:

Particulars	₹
Sales	7,40,000
Less: Variable cost	(4,44,000)
Contribution	2,96,000
Less: Fixed cost	(96,000)
Profit	2,00,000
Less: Tax	(1,00,000)
Profit after tax	1,00,000

$$\text{Sales} = \frac{2,96,000}{40\%} = 7,40,000$$

$$\text{Sales units} = \frac{7,40,000}{200} = 3,700 \text{ units}$$

(v) Profit at sales of ₹ 7,00,000:

Particulars	₹
Sales	7,00,000
Less: Variable cost	(4,20,000)
Contribution	2,80,000
Less: Fixed cost	(96,000)
Profit	1,84,000

Problem No. 3] The following data is obtained from the records of an industrial unit:

Sales of 4,000 units @ ₹ 25 each		1,00,000
Material consumed	40,000	
Variable overheads	10,000	
Labour charges	20,000	
Fixed overheads	18,000	88,000
Net Profit		12,000

You are required to calculate:

- The number of units by selling which the company will neither lose nor gain anything.
- The sales needed to earn a profit of 20% on sales.
- The extra units which should be sold to obtain the present profit if it is proposed to reduce the selling price by 20%
- The selling price to be fixed to bring down its break-even point to 500 units under present conditions.

[Dec. 2007 (7 Marks)]

Ans.

No. of units Particulars	p.u.	4,000 ₹
Sales	25.00	1,00,000
Less: Variable cost	(17.50)	(70,000)
Contribution	7.50	30,000
Less: Fixed cost		(18,000)
Net Profit		12,000

$$P/V \text{ ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{30,000}{100,000} \times 100 = 30\%$$

(v) Calculation of number of units by selling which the company will neither lose nor gain (i.e. BEP):

$$\text{BEP (in value)} = \frac{\text{Fixed cost}}{P/V \text{ ratio}} = \frac{18,000}{30\%} = 60,000$$

$$\text{BEP (in units)} = \frac{\text{Fixed cost}}{\text{Contribution p.u.}} = \frac{18,000}{7.5} = 2,400$$

(vi) Calculation of the sales needed to earn a profit of 20% on sales.

Particulars	₹
Sales	x
Less: Variable cost	$(0.7x)$
Contribution	$0.3x$
Less: Fixed cost	$(18,000)$
Net Profit	$0.2x$

$$0.3x - 18,000 = 0.2x$$

$$- 18,000 = - 0.1x$$

$$x = 1,80,000$$

(vii) Calculation of extra units which should be sold to obtain the present profit if it is proposed to reduce the selling price by 20%:

Present selling price per unit is ₹ 25 which after 20% it reduction will be ₹ 20 p. u.

Particulars	p.u.	₹
Sales	20	2,40,000
Less: Variable cost	(17.5)	(2,10,000)
Contribution	2.50	30,000
Less: Fixed cost		(18,000)
Net Profit		12,000

$$P/V \text{ ratio} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{2.5}{20} \times 100 = 12.5\%$$

$$\text{Required sales} = \frac{30,000}{12.5\%} = 2,40,000$$

$$\text{No. of units} = \frac{2,40,000}{20} = 12,000$$

Thus the extra units which should be sold to obtain the present profit if it is proposed to reduce the selling price by 20%: (12,000 - 4,000 = 8,000 units)

(viii) Calculation of selling price to be fixed to bring down its break-even point to 500 units under present conditions:

Particulars	p.u.	₹ 500
Sales	53.5	26,750
Less: Variable cost	(17.5)	(8,750)
Contribution	36	18,000
Less: Fixed cost		(18,000)
Net Profit		Nil

At BEP: Contribution = Fixed cost, hence Contribution = 18,000

$$\text{Contribution p. u.} = \frac{18,000}{500} = 36 \text{ p. u.}$$

Contribution p. u. + Variable cost p. u. = Selling price p. u.

$$36 + 17.5 = 53.5$$

Problem No. 4] A company has annual fixed cost of ₹1,40,00,000. In the year 2017-2018, sales amounted to ₹6,00,00,000 as compared with ₹4,50,00,000 in the preceding year Profit in 2017-2018 is ₹42,00,000 more than that in 2016-2017. On the basis of the above information, answer the following:

(i) At what level of sales, the company would have break even?

(ii) Determine profit/loss on a forecasted sales volume of ₹8,00,00,000.

If there is a reduction in selling price by 10% in the financial year 2018-2019 and company desires to earn the same amount of profit as in 2017-2018, what would be the required sales volume?

[Dec. 2008 (9 Marks)].

[Dec. 2011 (6 Marks)]

Ans.:

Year	2016-2017	2017-2018
Particulars	₹	₹
Sales	4,50,00,000	6,00,00,000
Less: Variable cost	?	?
Contribution	?	?
Less: Fixed cost	(1,40,00,000)	(1,40,00,000)
Net Profit	x	x + 42,00,000

$$\begin{aligned}
 \text{P/V ratio} &= \frac{\text{Change in profit}}{\text{Change in sales}} \times 100 \\
 &= \frac{(x + 42,00,000) - x}{6,00,00,000 - 4,50,00,000} \times 100 \\
 &= \frac{42,00,000}{1,50,00,000} \times 100 \\
 &= 28\%
 \end{aligned}$$

Year		2016-2017	2017-2018
Sales	100%	4,50,00,000	6,00,00,000
Less: Variable cost	(72%)	(3,24,00,000)	(4,32,00,000)
Contribution	28%	1,26,00,000	1,68,00,000
Less: Fixed cost		(1,40,00,000)	(1,40,00,000)
Net Profit		(14,00,000)	28,00,000

(i) Calculation of BEP:

$$\text{BEP (in value)} = \frac{\text{Fixed cost}}{\text{P/V ratio}} = \frac{1,40,00,000}{28\%} = 5,00,00,000$$

(ii) Calculation of profit/loss on a forecasted sales volume of ₹ 8,00,00,000:

Particulars		₹
Sales	100%	8,00,00,000
Less: Variable cost	(72%)	(5,76,00,000)
Contribution	28%	2,24,00,000
Less: Fixed cost		(1,40,00,000)
Net Profit		84,00,000

Problem No. 5] The sales turnover and profit during two periods were as follows:

Period-1 Sales: ₹ 20 lakh and Profit: ₹ 2 lakh

Period-2 Sales: ₹ 30 lakh and Profit: ₹ 4 lakh

Calculate:

- P/V ratio
- Sales required to earn a profit of ₹ 5 lakh and
- Profit when sales are ₹ 10 lakh.

[Dec. 2009 (6 Marks)]

Ans.

$$\begin{aligned}
 \text{(i) P/V ratio} &= \frac{\text{Change in profit}}{\text{Change in sales}} \times 100 \\
 &= \frac{4,00,000 - 2,00,000}{30,00,000 - 20,00,000} \times 100 \\
 &= 20\%
 \end{aligned}$$

Particulars		Period 1	Period 2
Sales	100%	20,00,000	30,00,000
Less: Variable cost	(80%)	(16,00,000)	(24,00,000)
Contribution	20%	4,00,000	(6,00,000)
Less: Fixed cost		(2,00,000)	(2,00,000)
Profit		2,00,000	4,00,000

(ii) Sales to earn a profit of ₹ 5,00,000:

Particulars		₹
Sales	100%	35,00,000
Less: Variable cost	(80%)	(28,00,000)
Contribution	20%	7,00,000
Less: Fixed cost		(2,00,000)
Profit		5,00,000

$$\text{Required sales} = \frac{7,00,000}{20\%} = 35,00,000$$

(iii) Profit when sales are ₹ 10,00,000:

Particulars		₹
Sales	100%	10,00,000
Less: Variable cost	(80%)	(8,00,000)
Contribution	20%	2,00,000
Less: Fixed cost		(2,00,000)
Profit		Nil

Problem No. 6] Two manufacturing companies which have the following operating details decided to merge:

	Company-I	Company-II
Capacity utilization (%)	90	60
Sales (₹ in lakh)	540	300
Variable costs (₹ in lakh)	396	225
Fixed costs (₹ in lakh)	80	50

Assuming that the proposal is implemented, calculate:

- Break-even sales of the merged plant and the capacity utilization at that stage.
- Profitability of the merged plant at 80% capacity utilization.
- Sales turnover of the merged plant to earn a profit of ₹ 75 lakh.
- When the merged plant is working at a capacity to earn a profit of ₹ 75 lakh, what percentage increase in selling price is required to sustain an increase of 5% in fixed overheads?

[June 2010 (9 Marks)]

Ans.

₹ in Lakh

Particulars	Plant I		Plant II		Merged
	90%	100%	60%	100%	100%
Sales	540	600	300	500	1,100
Less: Variable cost	(396)	(440)	(225)	(375)	(815)
Contribution	144	160	75	125	285
Less: Fixed cost	(80)	(80)	(50)	(50)	(130)
Profit	64	80	25	75	155

(i) Calculation of break-even sales of the merged plant and the capacity utilization at that stage:

$$P/V \text{ ratio (Merged plant)} = \frac{\text{Contribution}}{\text{Sales}} \times 100 = \frac{285}{1,100} \times 100 = 25.90909\%$$

$$BEP \text{ (in value) (Merged plant)} = \frac{\text{Fixed cost}}{P/V \text{ ratio}} = \frac{130}{25.90909\%} = 501.75 \text{ Lakhs}$$

$$\text{Capacity utilization at BEP} = \frac{501.75}{1,100} \times 100 = 45.61\%$$

(ii) Calculation of profitability of the merged plant at 80% capacity utilization:

Particulars	Merged
	80%
Sales (1,100 × 80%)	880
Less: Variable cost	(652)
Contribution	228
Less: Fixed cost	(130)
Profit	98

(iii) Calculation of sales turnover of the merged plant to earn a profit of ₹75 lakh:

Particulars	Merged
Sales	791.23
Less: Variable cost	(586.23)
Contribution	205.00
Less: Fixed cost	(130.00)
Profit	75.00

$$\text{Sales at 80% (Merged plant)} = \frac{205}{25.90909\%} = 791.23 \text{ Lakh}$$

(iv) Calculation of percentage increase in selling price required to sustain an increase of 5% in fixed overheads:

$$\text{Increase in fixed overheads} = 130 \times 5\% = 6.5$$

$$\text{Percentage increase in selling price} = \frac{6.5}{791.23} \times 100 = 0.8215\%$$

TAXMANN

Problem No. 7] A factory produces 300 units of a product per month. The selling price is ₹ 120 per unit and variable cost is ₹ 80 per unit. The fixed expenses of the factory amount to ₹ 8,000 per month.

Calculate:

- (i) The estimated profit in a month wherein 240 units are produced.
- (ii) The break-even sales quantity.
- (iii) The sales to be made to earn a profit of ₹ 7,000 per month.

[Dec. 2010 (5 Marks)]

Ans.

Present monthly profitability statement

No. of units Particulars	p. u.	300
		Total
Sales	120	36,000
Less: Variable cost	(80)	(24,000)
Contribution	40	12,000
Less: Fixed cost		(8,000)
Profit		4,000

- (i) Calculation of estimated profit in a month wherein 240 units are produced:

No. of units Particulars	p. u.	240
		Total
Sales	120	28,800
Less: Variable cost	(80)	(19,200)
Contribution	40	9,600
Less: Fixed cost		(8,000)
Profit		1,600

- (ii) Calculation of break-even sales quantity:

$$\text{BEP (in units)} = \frac{\text{Fixed cost}}{\text{Contribution p. u.}} = \frac{8,000}{40} = 200 \text{ units}$$

- (iii) Calculation of sales to be made to earn a profit of ₹ 7,000 per month:

Particulars	p. u.	Total
Sales	120	45,000
Less: Variable cost	(80)	(30,000)
Contribution	40	15,000
Less: Fixed cost		(8,000)
Profit		7,000

$$\text{Required sales} = \frac{15,000}{40} \times 120 = 45,000$$

Problem No. 8] Following data are provided by Mahi Ltd.:

Particulars	Product-Kau (₹)	Product-Vau (₹)
Direct material @ ₹ 25 per kg.	250	200
Direct labour @ ₹ 48 per hour	240	168
Selling Price	900	667
Variable overheads charged @ ₹ 30 per hour		

Raka, Managing Director, would like to decide which product to manufacture in the following circumstances:

- (1) If the monsoon is not up to the mark, in such circumstances the scarcity of raw material is expected for both products.
- (2) On account of e-marketing the sales volume may be a constraint. You are required to assist him in decision making, by considering both the situations in isolation.

[June 2019 (5 Marks)]

Ans.

Calculation of material required per unit:

$$\text{Product-Kau} = \frac{250}{25} = 10 \text{ kg per unit}$$

$$\text{Product-Vau} = \frac{200}{25} = 8 \text{ kg per unit}$$

Calculation of labour hours per unit:

$$\text{Product-Kau} = \frac{240}{48} = 5 \text{ hours per unit}$$

$$\text{Product-Vau} = \frac{168}{48} = 3.5 \text{ hours per unit}$$

Particulars	Kau (₹)	Vau (₹)
Selling price per unit	900	667
Direct material	250	200
Direct labour	240	168
Variable overheads	150	105
Variable cost per unit	640	473
Contribution per unit	260	194
P/V Ratio	28.89%	29.09%

(1) **Direct material is the key factor:**

Calculation of contribution per kg:

$$\text{Product-Kau} = \frac{260}{10} = 26$$

$$\text{Product-Vau} = \frac{194}{8} = 24.25$$

Product Kau is recommended.

(2) **Sales volume is key factor:** Contribution per unit of product Kau is more than that of Product Vau. Hence, Product Kau is recommended.