# FINANCIAL MANAGEMENT AND BUSINESS DATA ANALYTICS

**Time Allowed: 3 Hours** **Full Marks: 100**

The figures in the margin on the right side indicate full marks.

## SECTION – A (Compulsory)

**1) Choose the correct option:** **[15 x 2 = 30]**

**(i) The main objective of a firm's dividend policy is to:**

a. **Maximise the market value of debt**
b. **Maximise the market value of equity shares**
c. **Minimise tax liability**
d. **Increase production efficiency**

**(ii) If ₹5,000 is receivable 30 years hence at a 10% discount rate, its present value is approximately:.**

a. **₹500**
b. **₹246.45**
c. **₹286.49**
d. **₹100.5**

**(iii) To create a minimum variance portfolio, in what proportion should the two securities be mixed if the following information is given S1 = 10%, S2 = 12%, P12 = 0.6?**

a. **0.72 and 0.28**
b. **0.70 and 0.30**
c. **0.60 and 0.40**
d. **0.50 and 0.40**

**(iv) In India, NIFTY and SENSEX are calculated on the basis of**

a. **Market Capitalization**
b. **Paid up Capital**
c. **Authorized Share Capital**
d. **Free-float Capitalization**

**(v) A company issue commercial paper for 3 crores with a maturity period of 90 days. The interest rate is 11% p.a. The net amount received by the company will be :**

a. **2.94 crores**
b. **2.92 crores**
c. **2.85 crores**
d. **3.08 crores**

**(vi)** **ABC Ltd. has a Current Ratio of 1.5: 1 and Net Current Assets of 5,00,000. What are the Current Assets?**

a. **5,00,000**
b. **10,00,000**
c. **25,00,000**
d. **15,00,000**

**(vii)** **IG Ltd. has a gearing of 30%. Its cost of equity is 21% and the cost of debt is 15%. The company's WACC is:**

a. **14.3%**
b. **19.2%**
c. **14.7%**
d. **4.5%**

**(viii)** **Company X issues 11% bonds of 100 for an amount aggregating 200,000 at 10% premium, redeemable at par after 5 years. Corporate tax rate is 35%. The cost of bonds would be:**

a. **4.9%**
b. **5.0%**
c. **5.2%**
d. **6.0%**

**(ix)** **A firm is said to be financially unlevered if the firm has …….**

**a.** **only external equity in its capital structure.**
**b.** **only owner's equity in its capital structure.**
**c.** **both external equity and owner's equity in its capital structure**
**d.** **only equity share capital in its capital structure.**

**(x)** **Annual Cost Saving 4,00,000; Useful life 4 years; Cost of the Project 11,42,000. The Payback period would be -**

a. **2 years 8 months**
b. **2 years 11 months**
c. **3 years 2 months**
d. **3 year 10 months**

**(xi)** **Investment in a project is ₹ 200 lakhs and Net Present Value is ₹ 50 lakhs. Then the amount of inflows is :**

**a.** **₹ 150 lakhs**
**b.** **₹ 200 lakhs**
**c.** **₹ 100 lakhs**
**d.** **₹ 250 lakhs**

**(xii)** **Conversation of marketable securities into cash entails a fixed cost of 1,000 per transaction. What will be the optimal conversation size as per Baumol model of cash management?**

a. **315,628**
b. **316,228**
c. **317,678**
d. **318,426**

**(xiii)** **X Ltd. distributes its products to more than 500 retailers. The company's collection period is 30 days and keeps its inventory for 20 days. The operating cycle would be**

**a. 40 Days**
**b. 43 Days**
**c. 45 Days**
**d. 50 Days**

**(xiv)** **Ensuring a date is in the format "YYYY-MM-DD" is an example of:**

**a. Uniqueness check**
**b. Format check**
**c. Range check**
**d. Consistency check**

**(xv)** **Following is a widely used graph for data Visualisation**

**a. Bar chart**
**b. Pie chart**
**c. Histogram**
**d. All of the above**

**Answer:**

| i. | ii. | iii. | iv. | v. | vi. | vii. | viii. | ix. | x. | xi. | xii. | xiii. | xiv. | xv. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| b | c | a | d | b | d | b | a | b | b | d | b | d | b | d |

**Section – B**

**(Answer any five questions out of seven questions given. Each question carries 14 Marks)**

**[5 x 14 = 70]**

**2. (a) Explain the different types of NBFCs registered with RBI [7]**
**(b) Explain the process of data mining and its main steps. [7]**

**Answer:**

**(a)** Within this broad categorization the different types of NBFCs are as follows:

- **Asset Finance Company (AFC) :** An AFC is a company which is a financial institution carrying on as its principal business the financing of physical assets supporting productive/economic activity, such as automobiles, tractors, lathe machines, generator sets, earth moving and material handling equipments, moving on own power and general purpose industrial machines. Principal business for this purpose is defined as aggregate of financing real/physical assets supporting economic activity and income arising therefrom is not less than 60% of its total assets and total income respectively.
- **Investment Company (IC) :** IC means any company which is a financial institution carrying on as its principal business the acquisition of securities,
- **Loan Company (LC):** LC means any company which is a financial institution carrying on as its principal business the providing of finance whether by making loans or advances or otherwise for any activity other than its own but does not include an Asset Finance Company.
- **Infrastructure Debt Fund:** Non- Banking Financial Company (IDF-NBFC): IDF-NBFC is a company registered as NBFC to facilitate the flow of long-term debt into infrastructure projects. IDF-NBFC raise resources through issue of Rupee or Dollar denominated bonds of minimum 5-year maturity. Only Infrastructure Finance Companies (IFC) can sponsor IDF-NBFCs.
- **Non-Banking Financial Company – Factors (NBFC-Factors):** NBFC-Factor is a non-deposit taking NBFC engaged in the principal business of factoring. The financial assets in the factoring business should constitute at least 50 percent of its total assets and its income derived from factoring business should notbe less than 50 percent of its gross income.
- **Mortgage Guarantee Companies (MGC):** MGC are financial institutions for which at least 90% of the business turnover is mortgage guarantee business or at least 90% of the gross income is from mortgage guarantee business and net owned fund is ₹100 crore.
- **NBFC- Non-Operative Financial Holding Company (NOFHC):** It is the financial institution through which promoter / promoter groups will be permitted to set up a new bank. It's a wholly-owned Non- Operative Financial Holding Company (NOFHC) which will hold the bank as well as all other financial services companies regulated by RBI or other financial sector regulators, to the extent permissible under the applicable regulatory prescriptions.

**(b)** The process of data mining comprises a series of procedures, from data collecting through visualisation, in order to extract useful information from massive data sets. As stated previously, data mining techniques are utilised to develop descriptions and hypotheses on a specific data set. Through their observations of patterns, relationships, and correlations, data scientists characterise data. In addition to classifying and clustering data using classification and regression techniques, they discover outliers for use cases such as spam identification.
Data mining typically involves four steps: establishing objectives, acquiring and preparing data,

implementing data mining techniques, and assessing outcomes.

(i) **Setting the business objective:** This might be the most difficult element in the data mining process, yet many organisations spend inadequate effort on it. Together, data scientists and business stakeholders must identify the business challenge, which informs the data queries and parameters for a specific project. Analysts may also need to conduct further study to adequately comprehend the company environment.

(ii) **Preparation of data:** Once the scale of the problem has been established, it is simpler for data scientists to determine which collection of data will assist the company in answering crucial questions. Once the pertinent data has been collected, it will be cleansed by eliminating any noise, such as repetitions, missing numbers, and outliers. Based on the dataset, an extra step may be done to minimise the number of dimensions, as an excessive amount of features might slow down any further calculation. Data scientists seek to maintain the most essential predictors to guarantee optimal model accuracy.

(iii) **Model building and pattern mining:** Data scientists may study any intriguing relationship between the data, such as frequent patterns, clustering algorithms, or correlations, depending on the sort of research. While high frequency patterns have larger applicability, data variations can often be more fascinating, exposing possible fraud areas.

Depending on the available data, deep learning algorithms may also be utilised to categorise or cluster a data collection. If the input data is marked (i.e. supervised learning), a classification model may be used to categorise data, or a regression may be employed to forecast the probability of a specific assignment. If the dataset is unlabeled (i.e. unsupervised learning), the particular data points in the training set are compared to uncover underlying commonalities, then clustered based on those features.

(iv) **Result evaluation and implementation of knowledge:** After aggregating the data, the findings must be analysed and understood. When completing results, they must be valid, original, practical, and comprehensible. When this criterion is satisfied, companies can execute new strategies based on this understanding, therefore attaining their intended goals.

**3. (a) Using the following data, complete the Balance Sheet of F Limited as at 31.3.2024:**

- **Gross Profit 25% of Sales**
- **Gross Profit = ₹ 2,40,000**
- **Shareholders' equity = ₹ 40,000**
- **Credit sales to total sales = 80%**
- **Total turnover to total assets = 4 times**
- **Cost of sales to Inventory = 10 times**
- **Average collection period = 5 days, assume 365 days in a year.**
- **Long-term debt =?**
- **Current ratio = 1.5**
- **Sundry Creditors = ₹ 1,20,000.** **[7]**

**(b) QR Ltd. gives you the following information for the year ended 31st March, 2024:**

**(i) Sales for the year totalled ₹96,00,000. The company sells goods for cash only.**
**(ii) Cost of goods sold was 60% of sales. Closing inventory was higher than opening inventory by ₹20,000.**
**(iii) Tax paid amounted to ₹8,00,000. Other expenses totalled ₹21,45,000. Outstanding expenses on 31st March, 2023 and 31st March, 2024, totalled ₹82,000 and ₹91,000 respectively.**
**(iv) New machinery and furniture costing ₹10,50,000 in all were purchased. One equipment was sold for ₹20,000.**
**(v) A right issue was made of 50,000 shares of ₹10 each at a premium of ₹3 per share. The entire money was received with application.**
**(vi) Dividends totalling ₹4,00,000 were distributed among the shareholders.**
**(vii) Cash in hand and at Bank as at 31st March, 2023 and 31st March, 2024 totalled ₹2,10,000 and ₹3,14,000 respectively.**

**You are required to prepare cash flow statement for the year ended 31st March,2024 using the direct method. [7]**

**Answer:**

**(a) Working Notes:**

(1) Calculation of Sales

Given, Gross profit @ 25% = 2,40,000

Sales = 2,40,000/ 25% = 9,60,000.

- Credit Sales = 80% of ₹ 9,60,000 = ₹ 7,68,000
- Cash Sales = 20% of ₹ 9,60,000 = ₹ 1,92,000.

(2) Calculation of Cost of Goods Sold

Cost of Goods Sold = Sales - Gross Profit = ₹ 9,60,000 - ₹ 2,40,000 = ₹ 7,20,000.

(3) Calculation of Closing Inventory

Cost of Goods Sold to Inventory = 10 times.

Inventory = COGS / 10 = 720000/ 10 = 72,000 (assuming opening and closing inventory are same)

(4) Calculation of Total Assets

Total Turnover to Total Assets = 4 times. Total

Turnover/Total Assets = 4

Total Assets = 9,60,000/ 4 = 2,40,000

- Calculation of Current Assets

Current Ratio = Current Assets/Current Liabilities = 1.5: 1 (as, CL = Creditors = 120000)

1.5 Current Liabilities = Current Assets

or Current Assets = ₹ 1,20,000 / 1.5 = ₹ 1,80,000.

(5) Calculation of Debtors

Average collection period = 5 days Debtors

= (Credit Sales/365) × 5 Debtors

= (7,68,000/365) × 5 = 10,520

(6) Calculation of Current Cash

Current Assets = 1,80,000

Cash + Debtors + Inventory = 90,000

Cash = 1,80,000 – 10,520 – 72,000 = 97,480

Balance Sheet as on 31.03.2024

| Liabilities | ₹ | Assets | | ₹ |
|---|---|---|---|---|
| Shareholders' equity | 40,000 | Fixed Assets (b. f) | | 60,000 |
| Long term loan (b. f) | 80,000 | Current Assets: | | |
| Current Liabilities | 1,20,000 | Cash | 97,480 | |
| | | Debtors | 10,520 | |
| | | Stock | 72,000 | 1,80,000 |
| | 2,40,000 | | | 2,40,000 |

**(b)**

**QR LTD**

**Cash Flow Statement for the year ended 31st March, 2024**

**(Amount in ₹ Lakhs)**

| Particulars | ₹ | ₹ |
|---|---|---|
| Cash flow from operating activities: | | |
| Cash receipts from customers | 96.00 | |
| Cash paid to suppliers and employees (WN-1) | (79.16) | |
| Cash inflow from operation | 16.84 | |
| Tax paid | (8.00) | |
| Net cash from Operating Activities | | 8.84 |
| Cash flow from investing activities: | | |
| Purchase of Fixed Assets | (10.50) | |
| Proceeds from sale of Equipment | 0.20 | |
| Net cash from Investing Activities | | (10.30) |
| Cash Flow from Financing Activities: | | |
| Proceeds from issue of share capital (WN-2) | 6.50 | |
| Dividend paid | (4.00) | |

| | | |
|---|---|---|
| Net Cash from Financing Activities | | 2.50 |
| Net increase in Cash and Cash equivalents: | | 1.04 |
| Cash and cash equivalents as at 31st March, 2023 | | 2.10 |
| Cash and cash equivalents as at 31st March, 2024 | | 3.14 |

**Working Notes:**

| Particulars | (₹ in lakh) |
|---|---|
| 1. Calculation of cash paid to suppliers and employees: | |
| Cost of sales, 60% of ₹96.00 lakh | 57.60 |
| Add: Expenses incurred | 21.45 |
| Outstanding expenses on 31.03.23 | 0.82 |
| Excess of closing inventory over opening inventory | 0.20 |
| | 80.07 |
| Less: Outstanding expenses on 31.03.2024 | 0.91 |
| | 79.16 |

2. Proceeds from issue of share Capital:
Issue price of one share = ₹10 + ₹3 = ₹13
Proceeds from issue of 50,000 shares = 50,000 × 13 = ₹6.50 lakhs**.**

**4. (a) The income statements of T & Co. for the year ended on 31.12.2024 and 2025 are given below.Prepare a Comparative Income Statement and comment.**

| Particulars | 2024 (₹) | 2025 (₹) |
|---|---|---|
| **Net Sales** | **1,890** | **2,500** |
| **Cost of Goods Sold** | **1,240** | **1,570** |
| **Operating expenses:** | | |
| **Office and administrative expenses** | **180** | **210** |
| **Selling and distribution expenses** | **90** | **104** |
| **Non-operating expense:** | | |
| **Interest on loan** | **50** | **70** |
| **Income tax** | **110** | **120** |

**[7]**

**(b) While considering the most desirable Capital Structure of a company, the following estimates of the cost of debt and Equity Capital (after tax) have been made at various levels of the debt-equity mix:**

| Debt as Percentage of Total Capital Employed | Cost of Debt (%) | Cost of Equity (%) |
|---|---|---|
| 0 | - | 15 |
| 10 | 7 | 15 |
| 20 | 7 | 16 |
| 30 | 8 | 17 |
| 40 | 9 | 18 |
| 50 | 10 | 21 |
| 60 | 11 | 24 |

**What is composite Cost of Capital at different levels of debt-financing? Can you suggest an optimal debt–equity mix in the above case? [7]**

**Answer:**

**(a)**

**M/S T & Co.**
**Comparative Income Statement**
**For the year ended on 31.12.2024 and 2025**

| Particulars | 2024(₹) | 2025 (₹) | Absolute Change (₹) | Percentage Change (%) |
|---|---|---|---|---|
| Net Sales | 1,890 | 2,500 | 610 | 32.28 |
| Less: Cost of Goods Sold | 1,240 | 1,570 | 330 | 26.61 |
| Gross Profit (a) | 650 | 930 | 280 | 43.07 |
| Less: Operating expenses: | | | | |
| Office and admn. expenses | 180 | 210 | 30 | 16.67 |
| Selling and dist. expenses | 90 | 104 | 14 | 15.56 |
| Total (b) | 270 | 314 | 44 | 16.30 |
| Operating Profit (a – b) | 380 | 616 | 236 | 62.10 |
| Less: Non-operating expense: | | | | |
| Interest on loan | 50 | 70 | 20 | 40.00 |
| Net Profit before tax | 330 | 546 | 216 | 65.45 |
| Less: Income tax | 110 | 120 | 10 | 9.09 |
| | 220 | 426 | 206 | 93.64 |

Sales increased significantly by 32.28%, indicating strong demand or improved market reach. Gross

profit increased by 43.07%, which is higher than the sales growth — showing better cost control or improved pricing. Operating expenses increased only by 16.30%, much lower than the increase in sales and gross profit — a positive sign of efficient management. Operating profit rose sharply by 62.10%, indicating better operational efficiency.Net profit after tax nearly doubled, increasing by 93.64%, which shows excellent overall performance.Although interest expense rose by 40%, possibly due to additional borrowing, it did not significantly impact profitability.

**(b) The following table shows Cost of Capital at different levels:**

| Equity | | | Debt | | | Total Cost of Capital ($K_o$) |
|---|---|---|---|---|---|---|
| Proportion | Cost | Weighted Cost | Proportion | Cost | Weighted Cost | |
| 1.00 | 15 | 15 | — | — | — | 15.0 |
| 0.90 | 15 | 13.5 | 0.10 | 7 | 0.7 | 14.2 |
| 0.80 | 16 | 12.8 | 0.20 | 7 | 1.4 | 14.2 |
| 0.70 | 17 | 11.9 | 030 | 8 | 2.4 | 14.3 |
| 0.60 | 18 | 10.8 | 0.40 | 9 | 3.6 | 14.4 |
| 0.50 | 21 | 10.5 | 0.50 | 10 | 5 | 15.5 |
| 0.40 | 24 | 9.6 | 0.60 | 11 | 6.6 | 16.2 |

From the above table, it is evident that the Cost of Capital is minimum at two levels, i.e. (a) when equity is 90% and debt is 10% and (b) when equity is 80% and debt is 20%; hence, either of the two levels may be adopted.

**5.(a) From the following information, calculate Net Present Value of the following business proposal and suggest whether the proposal should be accepted or rejected:**

| | |
|---|---|
| **Initial Investment in Fixed Assets** | **₹10,00,000** |
| **Initial Investment in Working Capital** | **₹2,00,000** |
| **Salvage Value of Fixed Assets after 3 years** | **₹4,00,000** |
| **Annual Cash inflows before tax** | **₹6,00,000** |

**Income tax rate (on profit and capital gain) = 30%**

**Cost of capital = 18%**

**Depreciation is to be charged on WDV method @40%.**

**Present Values of Re. 1.00 at 18% are as follows:**

| Year | 1 | 2 | 3 |
|---|---|---|---|
| PVIF | 0.8475 | 0.7182 | 0.6086 |

**[7]**

**(b) Pioneer Ltd. is considering two mutually-exclusive projects. Both require an initial cash outlay of ₹10,000 each for machinery and have a life of 5 years. The company's required rate of return is 10% and it pays tax at 50%. The projects will be depreciated on a straight-line basis. The net cash flows (before taxes) expected to be generated by the projects and the present value (PV) factor (at 10%) are as follows:**

**(₹ in '000)**

| | 2020 (Year 1) | 2021 (Year 2) | 2022 (Year 3) | 2023 (Year 4) | 2024 (Year 5) |
|---|---|---|---|---|---|
| **Project 1 (₹)** | **4,000** | **4,000** | **4,000** | **4,000** | **4,000** |
| **Project 2 (₹)** | **6,000** | **3,000** | **3,000** | **5,000** | **5,000** |
| **PV factor (at 10%)** | **0.909** | **0.826** | **0.751** | **0.683** | **0.621** |

**You are required to calculate the Payback Period of each project.** **[7]**

**Answer:**

**(a)**

(i) Initial Cash Out Flow

| Particulars | Amount (₹) |
|---|---|
| Fixed Assets | 10,00,000 |
| Working | 2,00,000 |
| Capital Total | 12,00,000 |

(ii) Annual Cash Flows

| Year | CFBT | Depreciation | Taxable Profit | Tax @ 30% | CFAT | PVIF | PV @ 18% |
|---|---|---|---|---|---|---|---|
| 1 | 6,00,000 | 4,00,000 | 2,00,000 | 60,000 | 5,40,000 | 0.8475 | 4,57,650 |
| 2 | 6,00,000 | 2,40,000 | 3,60,000 | 1,08,000 | 4,92,000 | 0.7182 | 3,53,354 |
| 3 | 6,00,000 | 1,44,000 | 4,56,000 | 1,36,800 | 4,63,200 | 0.6086 | 2,81,904 |
| | | 7,84,000 | | | | | 10,92,908 |

(iii) Terminal Cash Flows

| Particulars | ₹ |
|---|---|
| Salvage Value | 4,00,000 |
| Tax on Capital Gain (4,00,000 – 2,16,000) × 30% | ( 55,200) |
| Working Capital | 2,00,000 |
| | 5,44,800 |

| | |
|---|---|
| Total | 0.6086 |
| PVIF (18% 3rd Year) | 3,31,565 |
| Present Value | |

WDV = 10,00,000 – 7,84,000 = 2,16,000

Net Present Value = (10,92,908 + 3,31,565) - 12,00,000 = ₹2,24,473

Decision: NPV is positive and hence the proposal should be accepted.

**(b)** **(₹ in '000)**

| Payback Period of Project - 1 | | | | | |
|---|---|---|---|---|---|
| **Year** | **2020 (Year 1)** | **2021 (Year 2)** | **2022 (Year 3)** | **2023 (Year 4)** | **2024 (Year 5)** |
| Cash Flows (₹) | 4,000 | 4,000 | 4,000 | 4,000 | 4,000 |
| Less: Depreciation (₹) | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Earnings before Tax (EBT) (₹) | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Less: Tax at 50% (₹) | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Net Income (₹) | 1,000 | 1,000 | 1,000 | 1,000 | 1,000 |
| Cash flows after tax (₹) | 3,000 | 3,000 | 3,000 | 3,000 | 3,000 |
| Cumulative cash flows (₹) | 3,000 | 6,000 | 9,000 | 12,000 | 15,000 |

Payback period would be the time when initial investment is recovered in cash. The investment is ₹ 10,000. Payback period would be between 3 and 4 years.

Payback Period = $3 + \frac{10000-9000}{3000}$

= 3.33 years

**(₹ in '000)**

| Payback Periods of Project - 2 | | | | | |
|---|---|---|---|---|---|
| **Year** | **2020 (Year 1)** | **2021 (Year 2)** | **2022 (Year 3)** | **2023 (Year 4)** | **2024 (Year 5)** |
| Cash Flows | 6,000 | 3,000 | 3,000 | 5,000 | 5,000 |
| Less: Depreciation | 2,000 | 2,000 | 2,000 | 2,000 | 2,000 |
| Earnings before Tax (EBT) | 4,000 | 1,000 | 1,000 | 3,000 | 3,000 |
| Less: Tax at (50%) | 2,000 | 500 | 500 | 1,500 | 1,500 |
| Net Income | 2,000 | 500 | 500 | 1,500 | 1,500 |
| Cash flows after tax | 4,000 | 2,500 | 2,500 | 3,500 | 3,500 |

| | | | | | |
|---|---|---|---|---|---|
| Cumulative cash flows | 4,000 | 6,500 | 8,500 | 12,000 | 15,500 |

Payback period would be the time when initial investment is recovered in cash. The investment is ₹ 10,000. Payback period would be between 3 and 4 years.

Payback Period = $3 + \frac{10000-8500}{3500}$

= 3.43 years

**6. (a) SRM Ltd. produces a product with the following revenue cost structure:**

| **Particulars** | **Cost per unit (₹)** |
|---|---|
| Raw materials | 115 |
| Direct labour | 80 |
| Overheads | 37 |
| **Total Cost** | **232** |
| Profit | 58 |
| Selling Price | 290 |

**The following additional information is available:**

- **Average raw materials in stock: One month.**
- **Average materials in process: Half-a-month, Raw material 100%, Direct labour 50%, overheads 50% complete.**
- **Average finished goods in stock: One month.**
- **Credit allowed by suppliers: One month**
- **Credit allowed to debtors: Two months.**
- **Time lag in payment of wages: Half a month.**
- **Overheads: One month**
- **One-fourth of sales are on cash basis.**
- **Cash balance is expected to be ₹ 1,60,000.**

**You are required to prepare a statement showing the working capital needed to finance a level of activity of 60,000 units of annual output. The production is carried throughout the year on even basis and wages and overheads accrue uniformly. Debtors are to taken at cost. [7]**

**(b) ABC Corporation is considering relaxing its present credit policy and is in the process of evaluating two proposed policies. Currently the firm has annual credit sales of ₹ 50 lakhs and accounts receivable turnover ratio of 4 times a year. The current level of loss due to bad debts is ₹1,50,000. The firm is required to give a return of 25% on the investment in new accounts receivables. The company's variable costs are 70% of the selling price. Given the following information, which is the better option?**

(Amount in ₹)

| Particulars | Present Policy | Policy Option I | Policy option II |
|---|---|---|---|
| **Annual credit sales** | **50,00,000** | **60,00,000** | **67,50,000** |
| **Accounts receivable turnover ratio** | **4 times** | **3 times** | **2.4 times** |
| **Bad debt losses** | **1,50,000** | **3,00,000** | **4,50,000** |

[7]

**Answer:**

**(a)** **Statement showing estimate of Working Capital**

| Particulars | (₹) | (₹) |
|---|---|---|
| Current Assets | | |
| Stock of Raw material (60,000 units × ₹115 × 1/12) | | 5,75,000 |
| Work-in-progress: | | |
| Raw materials (60,000 units × ₹115 × 1/12 × 1/2) | 2,87,500 | |
| Direct labour (60,000 units × ₹80 × 1/12 × 1/2 ×1/2) | 1,00,000 | |
| Overheads (60,000 units × ₹37 × 1/12 × 1/2 × 1/2) | 46,250 | 4,33,750 |
| Stock of finished goods (60,000 units × ₹232 × 1/2) | | 11,60,000 |
| Debtors (60,000 units × ₹232 × 3/4 × 2/12) | | 17,40,000 |
| Cash balance | | 1,65,000 |
| Total | (A) | 40,73,750 |
| Current Liabilities: | | |
| Creditors for raw material (60,000 units × ₹115 × 1/12) | | 5,75,000 |
| Creditors for wages (60,000 units × ₹80×1/12 × 1/2) | | 2,00,000 |
| Creditors for overheads (60,000 units × ₹37 × 1/12) | | 1,85,000 |
| Total | (B) | 9,60,000 |
| Net Working Capital | (A) – (B) | 31,13,750 |

**(b) Statement showing the Evaluation of Debtors Policies**

| Particulars | | Present Policy | Proposed Policy I | Proposed Policy II |
|---|---|---|---|---|
| | | (₹) | (₹) | (₹) |
| A | Expected Profit | | | |
| | (i)Credit Sales | 50,00,000 | 60,00,000 | 67,50,000 |
| | (ii) Total Cost other than Bad Debts: | | | |
| | Variable Costs | 35,00,000 | 42,00,000 | 47,25,000 |
| | (iii)Bad Debts | 1,50,000 | 3,00,000 | 4,50,000 |
| | (iv)Expected Profit [(i) - (ii)- (iii)] | 13,50,000 | 15,00,000 | 15,75,000 |
| B | Opportunity Cost of Investments in Receivables | 2,18,750 | 3,50,000 | 4,92,188 |
| C | Net Benefits (A - B) | 11,31,250 | 11,50,000 | 10,82,812 |

Recommendation: The Proposed Policy 'I' should be adopted since the net benefits under this policy is higher as compared to other policies.
Workings Notes: Calculation of Opportunity Cost of Average Investments
Opportunity Cost = Total Cost × Collection period / 12 × Rate of Return / 100

Present Policy = ₹ 35,00,000×3/12×25% = ₹ 2,18,750

Proposed Policy I = ₹42,00,000×4/12×25%= ₹ 3,50,000

Proposed Policy II = ₹ 47,25,000× 5/12×25% = 4,92,188.

**7. (a) The existing capital structure of XYZ Ltd. is as under (₹)**

| | |
|---|---|
| **Equity Shares of ₹100 each** | **40,00,000** |
| **Retained Earnings (₹)** | **10,00,000** |
| **9% Preference Shares (₹)** | **25,00,000** |
| **7% Debentures (₹)** | **25,00,000** |

**The existing rate of return on the company's capital is 12% and the income-tax rate is 50%. The company requires a sum ₹ 25,00,000 to finance an expansion programme for which it is considering the following alternatives:**

**(i) Issue of 20,000 equity shares at a premium of ₹ 25 per share.**

**(ii) Issue of 10% preference shares.**

**(iii) Issue of 8% debentures.**

**It is estimated that the P/E ratios in the cases of equity preference and debenture financing would be 20, 17 and 16 respectively. Which of the above alternatives would you consider to be the best?[7]**

**(b) Calculate (a) the operating leverage, (b) financial leverage and (c) combined leverage from the following data under situations I and II and financial plans, A and B.**

**Installed capacity- 4,000 units**

**Actual production and sales- 75 % of the capacity.**

**Selling price- ₹ 300 per unit**

**Variable cost- ₹ 150 per unit**

**Fixed cost:**

**Under situation I - ₹ 1,50,000**

**Under situation II - ₹ 2,00,000**

| Particulars | Plan A (₹) | Plan B (₹) |
|---|---|---|
| **Equity** | **1,00,000** | **1,50,000** |
| **Debt (Interest 20%)** | **1,00,000** | **50,000** |
| **Total** | **2,00,000** | **2,00,000** |

**[7]**

**Answer:**

**(a) Evaluation of various financial alternatives**

| | Plan I (Equity) (₹) | Plan II (Preference Shares) (₹) | Plan III (Debentures) (₹) |
|---|---|---|---|
| 1. EBIT | 15,00,000 | 15,00,000 | 15,00,000 |
| 2. Interest: | | | |
| Existing | 1,75,000 | 1,75,000 | 1,75,000 |
| Additional | - | - | 2,00,000 |
| Total Interest | 1,75,000 | 1,75,000 | 3,75,000 |
| 3. PBT (1-2) | 13,25,000 | 13,25,000 | 11,25,000 |
| 4. TAX (50%) | 6,62,500 | 6,62,500 | 5,62,500 |
| 5. PAT (3-4) | 6,62,500 | 6,62,500 | 5,62,500 |
| 6. Preference dividend | | | |
| Existing | 2,25,000 | 2,25,000 | 2,25,000 |
| Additional | - | 2,50,000 | - |

| | | | |
|---|---|---|---|
| Total Preference Dividend | 2,25,000 | 4,75,000 | 2,25,000 |
| 7. Equity Earnings (5-6) | 4,37,500 | 1,87,500 | 3,37,500 |
| 8. No. of Equity Shares | *60,000 | 40,000 | 40,000 |
| 9. EPS (7/8) | 7.29 | 4.69 | 8.44 |
| 10. P/E Ratio (Given) | 20 | 17 | 16 |
| 11. Market Price per Share | 145.80 | 79.73 | 135.04 |

* Note 1**:** No. of shares under Plan I

| | |
|---|---|
| Existing shares | ₹40,000 |
| Additional shares | ₹20,000 |
| Total shares | ₹60,000 |

**(b)**

**(i) Determination of operating leverage**

| Particulars | Situation I (₹) | Situation II (₹) |
|---|---|---|
| Sales | 9,00,000 | 9,00,000 |
| Less: Variable costs | 4,50,000 | 4,50,000 |
| Contribution | 4,50,000 | 4,50,000 |
| Less: Fixed Cost | 1,50,000 | 2,00,000 |
| EBIT | 3,00,000 | 2,50,000 |
| Operating Leverage (Contribution/EBIT) | 1.5 | 1.8 |

**(ii) Determination of financial leverage**

| Particulars | Situation I (₹) | | Situation II (₹) | |
|---|---|---|---|---|
| | Plan A | Plan B | Plan A | Plan B |
| EBIT | 3,00,000 | 3,00,000 | 2,50,000 | 2,50,000 |
| Less: Interest on debt | 20,000 | 10,000 | 20,000 | 10,000 |
| EBT | 2,80,000 | 2,90,000 | 2,30,000 | 2,40,000 |
| Financial Leverage (EBIT/EBT) | 1.07 | 1.03 | 1.09 | 1.04 |

**(iii) Determination of combined leverage**

| Particulars | Plan A | Plan B |
|---|---|---|
| Situation -I | 1.5 × 1.07 = 1.61 | 1.5 × 1.03 = 1.54 |
| Situation -II | 1.8 × 1.09 = 1.96 | 1.5 × 1.04 = 1.87 |

**8. (a) Explain the qualitative and quantitative types of data used in finance and costing. [7]**

**(b) Explain the process of data analytics. [7]**

**Answer:**

**(a)** The kinds of data used in finance and costing may be quantitative as well as qualitative in nature.

Quantitative financial data: By the term 'quantitative data', we mean the data expressed in numbers.The quantitative data availability in finance is significant. The stock price data, financial statements etc are examples of quantitative data. As most of the financial records are maintained in the form of organised numerical data.

Qualitative financial data: However, some data in financial studies may appear in a qualitative format e.g. text, videos, audio etc. These types of data may be very useful for financial analysis. For example, the 'management discussion and analysis' presented as part of annual report of a company is mostly presented in the form of text. This information is useful for getting an insight into the performance of the business. Similarly, key executives often appear for an interview in business channels. These interactions are often goldmines for data and information.

**(b)** Following are the steps for data analytics:

Step 1: Criteria for grouping data: Data may be segmented by a variety of parameters, including age, population, income, and sex. The data values might be either numeric or category.

Step 2: Collecting the data: Data may be gathered from several sources, including internet sources, computers, personnel, and community sources.

Step 3: Organizing the data:After collecting the data, it must be arranged so that it can be analysed. Statistical data can be organised on a spreadsheet or other programme capable of handling statistical data.

Step 4: Cleaning the data:The data is initially cleansed to verify that there are no duplicates or errors. The document is then examined to ensure that it is comprehensive. Before data is sent to a data analyst for analysis, it is beneficial to rectify or eliminate any errors by cleaning the data.

Step 5: Adopt the right type of data analytics process: There are four types of data analytics process:

Descriptive analytics
Diagnostics analytics
Predictive analytics
Prescriptive analytics