

SUGGESTED ANSWER

SECTION – A

1.

- (i)** (B)
- (ii)** (C)
- (iii)** (A)
- (iv)** (B)
- (v)** (D)
- (vi)** (C/D)
- (vii)** (B)
- (viii)** (B)
- (ix)** (D)
- (x)** (A)
- (xi)** (D)
- (xii)** (D)
- (xiii)** (A)
- (xiv)** (A)
- (xv)** (B)

SECTION – B

2. (a):

Meaning of Repo:

Repo or ready forward contract is an instrument for borrowing funds by selling securities with an agreement to repurchase the said securities on a mutually agreed future date at an agreed price which includes interest for the funds borrowed. Repo rate is the return earned on a repo transaction expressed as an annual interest rate.

Features of Repo:

- (i)** Banks and primary dealers are allowed to undertake both repo and reverse repo transactions.
- (ii)** It is a collateralized short-term lending and borrowing agreement.
- (iii)** It serves as an outlet for deploying funds on short-term basis.
- (iv)** The interest rates depend on the demand and supply of the short-term surplus/deficit amongst the interbank players.
- (v)** In addition to T-Bills all Central and State Government securities are eligible for repo.
- (vi)** No sale of securities should be affected unless the securities are actually held by the seller in his own investment portfolio.
- (vii)** Immediately on sale, the corresponding amount should be reduced from the investment account of the seller.
- (viii)** The securities under repo should be marked to market on the balance sheet.

2. (b):

Data mining typically involves four steps as follows:

(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):

(i) **Dividend Yield**

$$\begin{aligned} &= (\text{Dividend per share} / \text{Market price per share}) * 100 \% \\ &= (0.40 / 10) * 100\% \\ &= 4\% \end{aligned}$$

(ii) **Earnings per Share (EPS)**

$$\begin{aligned} &= \text{Profit available to shareholders} / \text{Number of shares} \\ &= ₹ 2,00,000 / 400,000 \\ &= ₹ 0.50 \text{ (assuming there is no preference share capital)} \end{aligned}$$

(iii) **Price Earnings ratio (P/E)**

$$\begin{aligned} &= \text{Market price per share} / \text{EPS} \\ &= 10 / 0.50 \\ &= 20 \end{aligned}$$

(iv) **Payout Ratio**

$$\begin{aligned} &= \text{Dividend per share} / \text{EPS} \\ &= 0.40 / 0.50 \\ &= 0.8 \text{ or } 80\% \end{aligned}$$

(v) Valuation Ratio

= Market Price per share/ Book Value per share

= 10/30

= 0.33

Alternatively

Valuation Ratio

= Book Value per share/ Market value per share

= 30/10

= 3

(vi) ROCE ***

= Annual earning after interest and tax/ Capital Employed

= 2,00,000 / 1,28,00,000

= 1.5625% ***

(Long term Debt = 100000 x 8 = 800000; Shareholders' fund = 400000 x 30 = 1,20,00,000; Capital employed = 800000+ 12000000 = 1,28,00,000)

[Note *** - For ROCE calculation, numerator is either EBIT or NOPAT (not annual PAT).

(vii) Debt - Equity Ratio

= Long term Debt / Shareholders' fund

= 8,00,000 / 1,20,00,000

= 0.067:1 or 6.67%

3. (b):

Cash Flow statement from Investing Activities

Particulars	₹	₹
Cash Receipts from sale of land	2,90,000	
Cash Receipts from sale of machinery	75,000	
Total Cash Receipts		3,65,000
Less: Purchase of machinery	4,05,000	
Less: Purchase of furniture	30,000	
Less: Purchase of investments	1,20,000	
Total Cash payments		5,55,000
Net cash outflow from investing activities		(1,90,000)

Working Notes:

Dr.		Land A/c	Cr.
	₹		₹
To bal. b/d	18,00,000	By Bank A/c (Sale) – b.f	2,90,000
To Profit on sale	90,000	By bal. c/d	16,00,000
	18,90,000		18,90,000

Alternatively

Sale of land = (18,00,000 – 16,00,000) + 90,000 = ₹ 2,90,000

Dr.		Furniture A/c	Cr.
	₹		₹
To bal. b/d	1,00,000	By Dep. A/c	10,000
To Bank A/c (Purchase) – b.f	30,000	By bal. c/d	1,20,000
	1,30,000		1,30,000

Alternatively

Purchase of furniture = 1,20,000+10,000 – 1,00,000 = ₹ 30,000

Dr.	Machinery A/c	Cr.
	₹	₹
To bal. b/d	15,00,000	By Dep. A/c 25,000
		By Bank A/c 75,000
		By Loss on sale 5,000
To Bank A/c (Purchase) – b.f	4,05,000	By bal. c/d 18,00,000
	19,05,000	19,05,000

Alternatively

Purchase of machinery = 18,00,000+25,000 + 8,00,000 –15,00,000 = ₹ 4,05,000

Purchase of investment =(2,10,000 – 90,000) = ₹ 1,20,000 (can be shown within the statement also)

4. (a):

Particulars	31/12/23	31/12/24	31/12/25	31/12/23	31/12/24	31/12/25
	₹	₹	₹	(%)	(%)	(%)
Sales	10,000	15,000	20,000	100	150	200
Less: Cost of Goods sold	7,000	8,750	14,000	100	125	200
Gross Profit	3,000	6,250	6,000	100	208.33	200
Less: Administrative Expenses	1,000	1,250	1,500	100	125	150
Finance Expenses	500	625	750	100	125	150
Selling Expenses	250	375	500	100	150	200
Net profit before Tax	1,250	4,000	3,250	100	320	260
Less: Income Tax	250	800	1,000	100	320	400
Net profit after Tax	1,000	3,200	2,250	100	320	225

4. (b):**Cost of Equity Share Capital**

$$K_e = \frac{D_1}{NP} \times 100 + g = \frac{12}{150-2} \times 100 + 7\% = 8.11\% + 7\% = 15.11\%$$

Cost of Preference Share Capital:

$$K_p = \frac{D}{NP} \times 100 = \frac{11}{120-4} \times 100 = 9.48\%$$

Cost of Debentures:

$$K_{da} = \frac{I(1-t) + \frac{1}{n}(RV-NP)}{\frac{1}{2}(RV+NP)} \times 100 \quad (I-t) = K_{da} = \frac{45(1-0.35) + \frac{1}{10}(500-490)}{\frac{1}{2}(500+490)} \times 100 = \frac{29.25+1}{495} \times 100 = 6.11\%$$

Weighted Average Cost of Capital using Book Value Weights

Source	Book Value ₹	Proportion or Weight	Cost %	Weighted Cost
Equity Shares	10,00,000	0.4	15.11	6.044
Preference Shares	5,00,000	0.2	9.48	1.896
Debentures	10,00,000	0.4	6.11	2.444
	25,00,000	1.00		10.384
Weighted Average Cost = 10.384 or 10.38%				

Weighted Average Cost of Capital using Market Value Weights

Source	Book Value ₹	Proportion or Weight	Cost %	Weighted Cost
Equity Shares	15,00,000	0.5	15.11	7.555
Preference Shares	6,00,000	0.2	9.48	1.896
Debentures	9,00,000	0.3	6.11	1.833
	30,00,000	1.00		11.284
Weighted Average Cost = 11.284 or 11.28%				

5. (a):

Computation of Net Present Value for five Projects (₹)

Project	Investment	Cash flow p.a.	No. of years.	PVIFA @10%	P.V.	NPV
A	50,000	18,000	10	6.145	1,10,610	60,610
B	1,00,000	50,000	4	3.170	1,58,500	58,500
C	1,20,000	30,000	8	5.335	1,60,050	40,050
D	1,50,000	40,000	16	7.824	3,12,960	1,62,960
E	2,00,000	30,000	25	9.077	2,72,310	72,310

Statement Showing Feasible Combinations of Projects and their NPV

Feasible combination of projects	Investment (₹)	NPV (₹)	Rank
(i) A, B and D	3,00,000	2,82,070	1
(ii) A, B and C	2,70,000	1,59,160	4
(iii) C & D	2,70,000	2,03,010	3
(iv) A & E	2,50,000	1,32,920	5
(v) B & D	2,50,000	2,21,460	2

Comment:

The optimum combination of projects, is Projects A, B and D with total investment of ₹ 3.00 lakhs since it has highest NPV of ₹ 2,82,070. Hence, the same should be taken up.

5. (b):

1. Cost of the Project

At 12% internal rate of return (IRR), the sum of total cash inflows = cost of the project i.e. initial cash outlay

Annual cash inflows = ₹ 1,00,000

Useful life = 4 years

Considering the discount factor table @ 12%, cumulative present value of cash inflows for 4 years is 3.038 (0.893+0.797+0.712+0.636)

Hence, Total Cash inflows for 4 years for the Project is ₹ 1,00,000×3.038
= ₹ 3,03,800

Hence, Cost of the Project = ₹ 3,03,800

2. Cost of Capital

Profitability index =

Sum of Discounted Cash in flows

Cost of the Project

1.064 =

Sum of Discounted Cash in flows

₹ 3,03,800

∴ Sum of Discounted Cash inflows = ₹ 3,23,243.20

Since, Annual Cash Inflows = ₹ 1,00,000

Hence, cumulative discount factor for 4 years = $\frac{3,23,243.20}{1,00,000} = 3.232$

From the discount factor table, at discount rate of 9%, the cumulative discount factor for 4 years is 3.239 (0.917+0.842+0.772+0.708)

Hence, Cost of Capital = 9% (approx.)

3. Net Present Value (NPV)

NPV = Sum of Present Values of Cash inflows – Cost of the Project

= ₹ 3,23,243.20 – ₹ 3,03,800

= ₹ 19,443.20

Net Present Value = ₹ 19,443.20

4. Payback Period

Payback period = Cost of the Project / Annual Cash Inflows

= ₹ 3,03,800 / ₹ 1,00,000

= 3.038 years

6. (a):

(if Debtors is calculated on the basis of total sales)

Statement Showing Working Capital Requirement

Current Assets:

₹

Stock of Raw Material (2 months): ₹ 31,20,000 $\times \frac{2}{12}$ = 5,20,000

Work-in progress* (3 weeks) : ₹ 43,68,000 $\times \frac{3}{52}$ = 2,52,000

Stock of finished goods (1 month):

₹ (57,36,000 - 1,20,000) $\times \frac{1}{12}$ = 4,68,000

Debtors (2 weeks): = ₹ 70,00,000 $\times \frac{50}{100} \times \frac{2}{52}$ = 1,34,615

Cash in hand (50% of Current Liabilities)

= ₹ 2,02,000 $\times \frac{50}{100}$ = 1,01,000

14,75,615

Less: Current Liabilities:

Creditors (4 weeks): = ₹ 31,20,000 $\times \frac{30}{100} \times \frac{4}{52}$ = 72,000

Overheads (1 month): = ₹ 6,24,000 $\times \frac{1}{12}$ = 52,000

Wages (1/2 month): = ₹ 18,72,000 $\times \frac{1}{24}$ = 78,000

2,02,000

Estimated Working Capital Requirement

12,73,615

Working Notes:

- *Work in progress: ₹
 Raw Material 31,20,000
 Wages (50% of 18,72,000) 9,36,000
 Overheads 50% of (7,44,000 - Dep. 1,20,000) 3,12,000
43,68,000
- Depreciation is non cash expenditure hence it will be ignored.

Alternate Solution**(if Debtors is calculated on the basis of cost of sales)****Statement Showing Working Capital Requirement**

Current Assets:		₹
Stock of Raw Material (2 months): ₹ 31,20,000 x $\frac{2}{12}$	=	5,20,000
Work-in progress* (3 weeks): ₹ 43,68,000 x $\frac{3}{52}$	=	2,52,000
Stock of finished goods (1 month): ₹ (57,36,000 - 1,20,000) x $\frac{1}{12}$	=	4,68,000
Debtors (2 weeks): = ₹ 56,16,000 x $\frac{50}{100}$ x $\frac{2}{52}$	=	1,08,000
Cash in hand (50% of Current Liabilities) = ₹ 2,02,000 x $\frac{50}{100}$	=	<u>1,01,000</u>
		<u>14,49,000</u>

Less: Current Liabilities:

Creditors (4 weeks):	= ₹ 31,20,000 x $\frac{30}{100}$ x $\frac{4}{52}$	=	72,000
Overheads (1 month):	= ₹ 6,24,000 x $\frac{1}{12}$	=	52,000
Wages (1/2 month):	= ₹ 18,72,000 x $\frac{1}{24}$	=	<u>78,000</u>
			<u>2,02,000</u>
Estimated Working Capital Requirement			<u>12,47,000</u>

Working Notes:

- *Work in progress: ₹
 Raw Material 31,20,000
 Wages (50% of 18,72,000) 9,36,000
 Overheads 50% of (7,44,000 - Dep. 1,20,000) 3,12,000
43,68,000
- Depreciation is non cash expenditure hence it will be ignored.

6. (b):

$$EOQ = \sqrt{\frac{2AS}{I}}$$

where, A = Annual Usage in units=90,000

Cost of placing an order = ₹ 300

I= Inventory carrying cost of one unit per year = ₹ 6

$$EOQ = \sqrt{\frac{2 \times 90,000 \times 300}{6}}$$

$$EOQ = \sqrt{90,00,000}$$

$$EOQ = 3,000 \text{ units}$$

As the supplier Anjali Ltd. offers discount on order quantity, we shall calculate the total cost of 3000 units, 4500 unit and 6000 units as below:

Order Size (units)	3000	4500	6000
Average Inventory (units)	1,500	2,250	3,000
Annual Requirements (units)	90,000	90,000	90,000
No. of orders	30	20	15
Price per unit (₹)	3	2.94	2.91
Cost of purchase (₹)	2,70,000	2,64,600	2,61,900
Carrying cost at ₹ 6 p.u. p.a. (₹)	9,000	13,500	18,000
Total ordering cost (₹)	9,000	6,000	4,500
Total cost (₹)	2,88,000	2,84,100	2,84,400

Here, No. of Orders = Annual requirements (units) / Order Size, Cost of purchase = Annual requirements (units) x price per unit, Total Cost = Cost of purchase + Carrying cost at ₹ 6 per unit+ Total Ordering Cost @ ₹ 300 per order

On the basis of above calculation, we find that the total cost at order size of 4500 unit is the lowest (₹ 2,84,100), therefore Mritunjay Ltd. should place order for 4500 units and obtain 2% discount.

7. (a):

Particulars	Plan 1	Plan 2
1. Total investment	5,00,000	5,00,000
2. Debt Capital (D)(₹)	2,00,000	3,00,000
3. Equity Capital (₹)	3,00,000	2,00,000
4. Cost of debt (K_d)	10%	12%
5. Cost of Equity Capital (K_e)	18%	20%
6. EBIT (₹)	75,000	75,000
7. Interest (I)(₹) = $D \times K_d$	20,000	36,000
8. EBT (₹) = $EBIT - I$	55,000	39,000
9. Market value of equity (E)(₹) = EBT / K_e	3,05,556	1,95,000
10. Value of the firm (V)(₹) = $E + D$	5,05,556	4,95,000
11. Overall Cost of Capital (K_0) = $K_d \times D/V + K_e \times E/V$	14.84%	15.15%

Comment:

The company should select Plan1 with higher value and lower cost of capital.

7. (b):

No. of equity shares to be issued under each Option:

$$\begin{aligned} \text{Option I} &= \frac{22,50,000}{150} = 15,000 \text{ Shares} \\ \text{Option II} &= \frac{15,00,000}{150} = 10,000 \text{ Shares} \\ \text{Option III} &= \frac{10,00,000}{125} = 8,000 \text{ Shares} \end{aligned}$$

Capital structure for new finance:

Particulars	Option I	Option II	Option III
Equity Share Capital	15,00,000	10,00,000	8,00,000
Securities Premium	7,50,000	5,00,000	2,00,000
Debt	2,50,000	10,00,000	15,00,000
Total	25,00,000	25,00,000	25,00,000

Statement showing profit available for equity shareholder and EPS:

Particulars	Option I	Option II	Option III
EBIT	5,00,000	5,00,000	5,00,000
(-) Interest			
- Up to ₹ 2,50,000	(25,000)	(25,000)	(25,000)
- Next ₹ 7,50,000	-	(1,12,500)	(1,12,500)
- Above ₹ 10,00,000	-	-	(1,00,000)
EBT	4,75,000	3,62,500	2,62,500
(-) Tax @ 50%	(2,37,500)	(1,81,250)	(1,31,250)
PAT/Profit available to equity shareholders	2,37,500	1,81,250	1,31,250
No. of equity shares	15,000	10,000	8,000
EPS	15.83	18.13	16.41

Decision: Since EPS is maximum at Option II, it should be selected.

8. (a):

To make the data turn into user friendly information, it should go through six core steps:

1. Collection of data:

The collection of data may be done with standardized systems in place. Appropriate software and hardware may be used for this purpose. Appointment of trained staff also plays an important role in collecting accurate and relevant data.

2. Organising the data:

The raw data needs to be organized in an appropriate manner to generate relevant information. The data may be grouped, arranged in a manner that create useful information for the target user groups.

3. Data processing:

At this step, data needs to be cleaned to remove the unnecessary elements. If any data point is missing or not available, that also need to be addressed. The options available for presentation format for the data also need to be decided.

4. Integration of data:

Data integration is the process of combining data from various sources into a single, unified form. This step includes creation of data network sources, a master server and users accessing the data from master server. Data integration eventually enables the analytics tools to produce effective, actionable business intelligence.

5. Data reporting:

Data reporting stage involves translating the data into a consumable format to make it accessible by the users. For example, for a business firm, they should be able to provide summarized financial information e.g. revenue, net profit etc. The objective is, a user, who wants to understand the financial position of the company should get the relevant and accurate information.

6. Data utilization:

At this ultimate step, data is being utilized to back corporate activities and enhance operational efficiencies and productivity for the growth of business. This makes the corporate decision making really 'data driven'.

8. (b):

Data analytics is the science of evaluating unprocessed datasets to draw conclusions about the information they contain. It helps us to identify patterns in the raw data and extract useful information from them.

Following are the steps for data analytics:

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.

Collecting the data

Data may be gathered from several sources, including internet sources, computers, personnel, and community sources.

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.

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.

Adopt the right type of data analytics process:

There are four types of data analytics process:

- (i) Descriptive analytics
- (ii) Diagnostics analytics
- (iii) Predictive analytics
- (iv) Prescriptive analytics