

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

$$\begin{aligned} \text{Profitability index} &= \frac{\text{Sum of Discounted Cash in flows}}{\text{Cost of the Project}} \\ 1.064 &= \frac{\text{Sum of Discounted Cash in flows}}{\text{₹ 3,03,800}} \\ \therefore \text{Sum of Discounted Cash inflows} &= \text{₹ 3,23,243.20} \\ \text{Since, Annual Cash Inflows} &= \text{₹ 1,00,000} \\ \text{Hence, cumulative discount factor for 4 years} &= \frac{3,23,243.20}{1,00,000} = 3.232 \end{aligned}$$

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)

$$\begin{aligned} \text{NPV} &= \text{Sum of Present Values of Cash inflows} - \text{Cost of the Project} \\ &= \text{₹ 3,23,243.20} - \text{₹ 3,03,800} \\ &= \text{₹ 19,443.20} \\ \text{Net Present Value} &= \text{₹ 19,443.20} \end{aligned}$$

4. Payback Period

$$\begin{aligned} \text{Payback period} &= \text{Cost of the Project} / \text{Annual Cash Inflows} \\ &= \text{₹ 3,03,800} / \text{₹ 1,00,000} \\ &= 3.038 \text{ years} \end{aligned}$$

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): | $\text{₹ } 31,20,000 \times \frac{2}{12}$ | = 5,20,000 |
| Work-in progress* (3 weeks) : | $\text{₹ } 43,68,000 \times \frac{3}{52}$ | = 2,52,000 |
| Stock of finished goods (1 month): | $\text{₹ } (57,36,000 - 1,20,000) \times \frac{1}{12}$ | = 4,68,000 |
| Debtors (2 weeks): | $= \text{₹ } 70,00,000 \times \frac{50}{100} \times \frac{2}{52}$ | = 1,34,615 |
| Cash in hand (50% of Current Liabilities) | $= \text{₹ } 2,02,000 \times \frac{50}{100}$ | = 1,01,000 |
| | | <u>14,75,615</u> |
| Less: Current Liabilities: | | |
| Creditors (4 weeks): | $= \text{₹ } 31,20,000 \times \frac{30}{100} \times \frac{4}{52}$ | = 72,000 |
| Overheads (1 month): | $= \text{₹ } 6,24,000 \times \frac{1}{12}$ | = 52,000 |
| Wages (1/2 month): | $= \text{₹ } 18,72,000 \times \frac{1}{24}$ | = 78,000 |
| | | <u>2,02,000</u> |
| Estimated Working Capital Requirement | | <u>12,73,615</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) | <u>3,12,000</u> |
| | <u>43,68,000</u> |
- 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) | <u>3,12,000</u> |
| | <u>43,68,000</u> |
- 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:

$$\text{Option I} = \frac{22,50,000}{150} = 15,000 \text{ Shares}$$

$$\text{Option II} = \frac{15,00,000}{150} = 10,000 \text{ Shares}$$

$$\text{Option III} = \frac{10,00,000}{125} = 8,000 \text{ Shares}$$

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