INTERMEDIATE EXAMINATION

June 2023

FINANCIAL MANAGEMENT AND BUSINESS DATA ANALYTICS

Time Allowed: 3 hours

Full Marks: 100

P-11(FMDA)

Syllabus 2022

 $1 \times 12 = 12$

The figures in the margin on the right side indicate full marks. Wherever considered necessary, suitable assumptions may be made and clearly indicated in the answer.

All workings must form part of your answer.

Answer Question No. 1 and any five from Question Nos. 2, 3, 4, 5, 6, 7 and 8.

SECTION-A

1. (a) Choose the correct alternatives:

- (i) The capital structure of X Ltd. consists of 40% Equity Share Capital, 40% Preference Capital and 20% Debt. The after-tax cost of the Preference Capital and Debt are 18% and 9% respectively. The weighted average cost is 19%. X Ltd. paid currently a dividend of ₹ 13 per share. The current market price of its equity share is ₹ 112. Find the growth rate.
 - (A) 9%
 - **(B)** 10%
 - (C) 11%
 - (D) 12%
- (ii) What will be the present value of a perpetuity of ₹ 10,000 payable at the beginning of each period and growing @ 5% p.a. and the interest rate is 10% p.a.?
 - (A) ₹2,00,000
 - (B) ₹2,10,000
 - (C) ₹2,20,000
 - (D) ₹2,30,000

Please Turn Over

(2)

(iii) Compute the beta of Security X from the following information:

σ_x = Standard Deviation of Security X	15%
σ_{M} = Standard Deviation of Market Portfolio	12%
r_{XM} = Regression Coefficient between returns of Security X and Market Portfolio	0.80

- (A) 1.00
- (B) 1.25
- (C) 0.80
- (D) 1.50
- (iv) During the Book Building process, if the floor of the Price Band is ₹ 150 then the cap of the Price Band can at maximum be
 - (A) ₹175
 - (B) ₹180
 - (C) ₹200
 - (D) ₹225
- (v) Quarterly demand of Product ZED 16250 units, 2.5 units of Product ZED are obtained from one unit of raw material. Opening Stock of material is 14,000 units and Closing Stock will be 20% more than opening stock. The company incurs a handling cost of ₹ 10 plus freight of ₹ 65 per order. Storage Cost ₹ 0.50 per unit per month, Interest Cost 10% p.a., Obsolescence Cost 2% p.a., Purchase Price of Input Unit ₹ 50 per unit. How frequently should orders be placed assuming 360 days in a year?
 - (A) 3 days
 - (B) 6 days
 - (C) 7.5 days
 - (D) 15 days

- (vi) Funds required ₹ 10,00,000 to be arranged by the issue of 30% Equity Shares of ₹ 10 each to be issued at ₹ 20, 60% in 10% Debt and Balance by 15% Preference Shares, Tax Rate: 25%. Return on Investment (ROI) is 30%. Return on Equity Shareholders Funds (ROE) will be
 - (A) 46.875%
 - (B) 47.50%
 - (C) 55%
 - (D) 60%
- (vii) PJ Ltd. purchased a Machine on 01.10.2021 for ₹ 20,80,000 payable as to 25% by a cheque and 50% of the balance by an issue of 14% Preference Shares of ₹ 500 each at a premium of ₹ 20 per share and the remaining by an issue of 12% Debentures of ₹ 500 each at a premium of 4%. Unpaid interest on these debentures and Unpaid Preference Dividend on 31st March 2022 amounted to ₹ 5,000 and ₹ 2,500 respectively. Calculate Cash flow from Financing Activities for Cash Flow Statement as per AS-3.
 - (A) (₹1,87,800)
 - (B) (₹1,80,000)
 - (C) (₹93,900)
 - (D) (₹90,000)
- (viii) The RBI offers 91 Days Treasury Bills. X makes a bid at ₹ 98.93. Calculate the Yield to Price at the bid made by X.
 - (A) 4.3382%
 - (B) 4.2918%
 - (C) 1.0700%
 - (D) 1.0816%

(ix) From the given information, calculate Altman's Z score.

Current Assets	₹ 10,00,000
Current Liabilities	₹ 2,00,000
EBIT	₹ 1,00,000
Sales	₹ 4,00,000
Retained Earnings	₹ 2,00,000
Total Assets	₹ 20,00,000
Total Debts	₹ 5,00,000
Market Value of Equity	₹ 25,00,000

(A) 4.125

(B) 3.985

- (C) 3.725
- (D) 3.125

(x) Interest from Fixed Deposits in Banks is shown as

(A) Cash Flows from Operating Activities

(B) Cash Flows from Investing Activities

- (C) Cash Flows from Financing Activities
- (D) None of the above

(xi) The Probability Density function describes

(A) the characteristics of a Random Constant.

(B) the characteristics of a Non-Random Constant.

(C) the characteristics of a Non-Random Variable.

(D) the characteristics of a Random Variable.

- (xii) A scatter plot displays several unique data points
 - (A) on four different graphs
 - (B) on three different graphs
 - (C) on a single graph
 - (D) on two different graphs

(b) State True or False:

(i) Accrual Principle is not followed in capital budgeting.

- (ii) Both IRR and NPV can be zero but both IRR and NPV can not be negative.
- (iii) Miller-Orr Model considers Transaction Cost, Holding Cost and Total annual requirement of cash when the demand for cash is uncertain.
- (iv) EPS is zero at Indifference Point and Financial Break Even Point.
- (v) Internal growth rate is the maximum rate at which the firm can grow without external financing of any kind.
- (vi) Any data expressed as a number is numerical data.
- (vii) Structured Data consists of tabular information that may be readily imported into a database and then utilised by analytics software or other applications.

(c) Fill in the blanks:

- (i) Assume that the company's existing Acid-Test Ratio is 2:1. On Purchase of treasury bills of ₹ 1,00,000, Acid-Test Ratio will be _____.
- (ii) ______ schedule classifies the receivables according to their age (the period for which they have been outstanding).
- (iii) All permanent current assets are financed out of long-term sources of finance under ______ Approach of Working Capital Management.
- (iv) Cash Flow Statement (based on Ind AS 7) for listed companies should be presented as per the _____ Method.
- (v) _____ is a collaborative funding model that collects small contributions from many individuals.
- (vi) Data ______ techniques are utilised to develop descriptions and hypotheses on a specific data set.

1×7=7

 $1 \times 6 = 6$

SECTION-B

- 2. (a) What is Wealth Maximisation as the Objective of Financial Management? Why is profit maximization, not an operationally feasible criterion? State briefly Interrelationship between Investment, Financing and Dividend Decisions. 1+2+2=5
 - (b) List any four Alternative Investment Funds (AIF) and four Credit Rating Agencies in India. List any six Money Market Instruments Traded. List any four features of Treasury bills. How is Yield on Treasury Bills calculated? 2+2+3+2+1=10
- (a) (i) Current Ratio 8:5, Quick Ratio 6:5, Inventory Velocity 4 months, Gross Profit @ 33¹/₃% on Cost was ₹ 10,00,000, Inventory at the end was 3 times more than that in the beginning. Calculate Working Capital Turnover Ratio.
 - (ii) 10% Debt-Equity Ratio 2:1, Net Profit (after Tax) Ratio 16.8%, Operating Profit Ratio 30%, Operating Expenses Ratio 10%, Inventory Velocity 1 month, Tax Rate 30%, Land & Building ₹ 6,75,000, Plant & Machinery ₹ 6,00,000, Capital Work-in-Progress ₹ 3,00,000. Inventory (including Raw Materials ₹ 15,000, Work-in-Progress ₹ 20,000 and Stores and Spares ₹ 5,000) ₹ 1,40,000. Trade Receivables ₹ 2,20,000, Provision for doubtful debts ₹ 20,000. Credit Sales are ₹ 2,00,000 more than Cash Sales. Calculate Interest Coverage Ratio, Trade Receivables Turnover Ratio and Return on Investment. 1+1+1=3
 - (b) From the following relevant extracts of the Balance Sheets of Oreo Ltd., calculate Cash Flow from Financing Activities to be disclosed in the Cash Flow Statement as per AS-3 issued by ICAI.

Particulars	31/03/2023 (in ₹)	31/03/2022 (in ₹)
Equity Share Capital (Shares of ₹ 10 each)	10,55,000	6,00,000
5% Pref. Share Capital (Shares of ₹ 100 each)	2,00,000	4,00,000
General Reserve	1,40,000	4,40,000
Profit and Loss A/c	6,42,000	(13,000)
Securities Premium	52,500	20,000
Capital Redemption Reserve		1,50,000

(6)

Particulars	31/03/2023 (in ₹)	31/03/2022 (in ₹)
Non-Current Liabilities(12% Debentures)	2,75,000	1,50,000
Current Liabilities:	C H STAL	2625 (a)
Outstanding Interest on Debentures	10,000	andre
Outstanding Underwriting Commission	5,000	-
Unclaimed Dividend on Equity Shares	20,000	_
Non-Current Assets (Machine)	30,000	-

Additional Information:

- (i) On 1st April 2022, Dividends (including an Equity Dividend @ 35%) were paid.
- (ii) On 1st May 2022, 20,000 Equity Shares of ₹ 10 each were issued to the public
 @ ₹ 15 to redeem Pref. Shares at a 5% premium.
- (iii) On 1st October 2022, 1,000 Pref. Shares of ₹ 100 each were issued to the public
 @ ₹ 150 to buy back 15,000 equity shares
 @ ₹ 15. On the same date, 50% of Debentures were redeemed at a 10% premium by converting into Equity Shares of ₹ 10 each @ ₹ 15 each and some New Debentures of ₹ 100 each were issued to the public.
- (iv) Underwriters were entitled to Commission on all public issues of securities at a maximum rate as per The Companies Act, 2013.
- (v) On 31st March 2023, a Machine costing ₹ 30,000 was purchased by the issue of Equity Shares of ₹ 10 each at a premium of 20%.
- 4. (a) (i) Kaloo Ltd. requires additional finance of ₹ 20 lakhs for meeting its investment plans. The company has ₹ 4,00,000 in the form of retained earnings available for investment purposes. Target Debt-Equity Ratio 25:75. Cost of debt is 10% (before tax) for the first ₹ 2,00,000 and 13% (before tax) beyond that. Earning per share ₹ 12. Dividend Payout Ratio 50%. P/E Ratio 5. The company wants to offer the issue of Equity Shares at a premium of 20% of the market price. The flotation cost is expected to be ₹ 6 per share. Company's tax rate is 30% and the shareholder's personal tax rate is 20%. Calculate the overall weighted average (after tax) cost of additional finance.

- (ii) Correlation Coefficient of Portfolio with market 0.8, Variance of Market Portfolio is 4/9th of Variance of Security, Cost of Equity 20%, Average Return on Market Portfolio 17.5%. Calculate the Risk-Free Rate of Interest on Govt. Treasury Bonds.
- (b) Explain briefly the five basic principles of data ethics that a business organization should follow.
- 5. (a) (i) Olio Ltd. needs to raise ₹ 10,00,000 for the construction of a new plant and provides you the following information:

Financing Plan A	40% Equity and Balance in 10% Debt
Financing Plan B	30% Equity, 60% in 10% Debt and Balance in 15% Pref. Shares.

- (A) Equity Shares of the face value of ₹ 10 each will be issued at a premium of 110%. Flotation cost ₹ 1 per share, 15% Pref. Shares of a face value of ₹ 100 each will be issued at a premium of 110%. Flotation cost ₹ 10 per share,
- (B) Expected Capital Turnover Ratio 1, Expected Sales to Variable Cost Ratio 156.25%, Fixed Cost ₹ 60,000. Tax Rate: 25%.

Required: Calculate the Indifference point and Financial Break Even Point. 3+3=6

(ii) SL Ltd. provides you with the following information:

Equity Share Capital (₹ 50 each)	₹ 100 lakhs
12% Preference Share Capital	₹ 50 lakhs
10% Debentures	₹ 50 lakhs
Return on Capital Employed	18.75%
Total Dividend (including dividend on Preference Shares) paid	₹ 18 lakhs
Theoretical Market Price of an equity share under Gordon's Model	₹ 300

Tax Rate 20%, Market Price of an equity share in the beginning of the year was ₹ 100

Required: Determine the theoretical market price of an equity share under Walter's Model and M. M. Model. Are you satisfied with the current dividend policy of the company? If not, what should be the optimum payout ratio? 4

(b) What is Data Cleaning? What are the Steps for data cleaning? What are the benefits of data cleaning?
1+2+2=5

10

Particulars	Machine X	Machine Y
1. Purchase Price of Machine	₹ 6,00,000	₹ 10,00,000
2. Working Capital	₹ 3,00,000	₹ 5,00,000
3. Useful Life of the machine	5 years	8 years
4. Estimated Salvage Value at the end of useful life	₹ 1,00,000	₹ 2,00,000
5. Actual Salvage Value realised at the end of useful life	₹ 1,20,000	₹ 80,000
6. Method of Depreciation	Straight line	Straight line
7. Tax Rate	30%	30%
8. Annual Earning before Tax	₹4,00,000	₹ 4,00,000
9. Annuity Factor for 5/8 yrs @ 10%	3.791	5.335
10. PV Factor for 5th/8th year @ 10%	0.621	0.467

6. (a) Nona Ltd. provides you with the following information:

Required: Which of the above machines should be purchased?

(b) HONEY Ltd. having limited funds of ₹ 10,10,000 and cost of capital 10% is evaluating the desirability of following projects having useful life of 10 years:

Project	Α	В	C	D	E	F
Initial Cash Outflows (₹)	50,000	1,00,000	1,50,000	2,00,000	2,50,000	6,00,000
Net Present Value (₹)	4,50,000	8,00,000	10,50,000	12,00,000	13,75,000	32,40,000
Ranking as per NPV	6	5	4	3	2	1
Ranking as per Profitability Index	1	2	3	4	5	6

Required:

- (i) Which projects should be selected assuming that the projects are divisible and there is no alternative use of money allocated for capital budgeting.
- (ii) Which projects should be selected assuming that the projects are indivisible and unutilised funds can be invested for a period of 10 years at a risk-free interest rate of 5%.

Note: The Compound Value of ₹ 1 @5% at the end of the 10th year is ₹ 1.629 and the Present Value of ₹ 1 @10% at the end of the 10th year is ₹ 0.386. 2+3=5

(10)

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7. (a) Oli Ltd. provides you with the following information:

Estimated Level of Activity: Completed Units of Production 1,04,000 plus units of WIP

YV II	the second se
Raw material	19.6% of the selling price
Wages	10.6% of the selling price
Production Overheads (including depreciation of ₹15 per unit at the budgeted level of activity)	17.6% of the selling price
Selling Price	₹ 500 per unit
Average raw material in stock	3 weeks
Average work-in-progress (% of completion with respect to Material- 75%, Conversion Cost- 70%)	2 weeks
Finished goods in stock	4 weeks
Credit allowed to debtors	2 ¹ /2 weeks
Credit allowed by creditors	3 ¹ /2 weeks
Time lag in payments of labour	2 weeks
Time lag in payments of Production Overheads	1 ¹ / ₂ weeks
Cash Sales and Cash Purchases	25%

The company believes in keeping $\overline{\mathbf{z}}$ 3,00,000 available to it including the overdraft limit of $\overline{\mathbf{z}}$ 75,000 not yet utilized by the company.

Provision for contingencies is required @ 4% of the working capital requirement including that provision.

Assume that production is carried on evenly throughout the year (52 weeks) and wages and overheads accrue similarly.

You are required to calculate the Net Working Capital Requirement on Cash Cost Basis if Oli Ltd. is an existing company. 10

(b) TULSI Ltd. provides the following information:

The company maintains a minimum cash balance of $\overline{\mathbf{x}}$ 10,00,000. The standard deviation of the company's daily cash flow is $\overline{\mathbf{x}}$ 3,60,000. The annual interest rate is 12%. The transaction cost of buying & selling securities is $\overline{\mathbf{x}}$ 180 per transaction. (Assume 360 days in a year).

Required: Calculate the upper limit, return point, and Average Cash Balance as per the Miller-Orr model. 2+2+1=5

- 8. (a) List the following:
 - (i) Steps involved in using Data Visualisation in report design
 - (ii) Objectives of Data Visualisation
 - (iii) Important four issues which the presenter should keep in mind for effective Data Visualisation
 - (iv) List any four Tools for visualising and presenting the data. 2.5+1.5+2+2=8

(b) State the meaning, objectives and scope of Data Presentation Architecture (DPA). 1+2+4=7

SUGGESTED ANSWERS TO QUESTIONS

SECTION – A

- **1.** (a)
 - (i) (D)
 - (ii) (C)
 - (iii) (A)
 - (iv) (B)
 - (v) (C)
 - (vi) (C)
 - (vii) (D)
 - (viii) (A)
 - (ix) (B)
 - (x) (A)
 - (xi) (D)
 - (xii) (C)

1. (b)

- (i) True
- (ii) False
- (iii) False
- (iv) False
- (v) True
- (vi) True
- (vii) True

1. (c)

- (i) Same or 2:1or 2
- (ii) Aging
- (iii) Conservative Approach and Matching or Conservative and Matching
- (iv) Indirect
- (v) Crowd funding
- (vi) Mining

SECTION – B

2. (a)

Wealth Maximisation means maximisation of the market price of the equity shares of the company in the long run. The long run implies a period which is long enough to reflect the normal market price of the shares irrespective of short-term fluctuations. The long run price of an equity share is a function of two basic factors:

- (i) The likely rate of earnings or earnings per share (EPS) of the company; and
- (ii) The capitalisation rate reflecting the liking of the investors of a company.

Profit maximization is not an operationally feasible criterion because it suffers from the following limitations:

- 1. It is vague because it is not clear whether the term relates to economic profit, accounting profit, profit after tax or before tax.
- 2. It ignores the Timing of Returns.
- 3. It ignores Risk factor.
- 4. It assumes Perfect Competition.
- 5. In new business environment profit maximization is regarded as -
- (i) Unrealistic
- (ii) Difficult
- (iii) Inappropriate
- (iv) Immoral

Investment, financing, and dividend decisions are integral components of a company's financial management, and they are closely interconnected, collectively shaping the company's overall financial strategy.

- 1. Investment decisions directly impact both financing and dividend decisions. When a company decides to undertake an investment project, it requires funds to finance it. This leads to financing decisions, where the company must choose the appropriate mix of debt and equity to raise the necessary capital. If the company opts for more debt, it might have higher interest obligations, affecting the available funds for dividends. Conversely, if it raises more equity, it could lead to dilution of ownership and potentially affect shareholders' dividend expectations.
- 2. Financing decisions, in turn, influence investment and dividend decisions. The cost and availability of financing can affect the feasibility of certain investment opportunities. If financing is costly or restricted, the company might forego potentially profitable investments. Moreover, the level of debt in the capital structure impacts the company's financial risk, affecting its dividend policy. High debt levels may result in the company retaining more earnings to repay debt, limiting dividend payouts.
- 3. Dividend decisions also play a role in the interrelationship. The company's dividend policy depends on its financial performance and the available cash flow. If the company pays out a substantial portion of earnings as dividends, it might have fewer funds available for investments. This could impact the company's growth prospects and, consequently, its ability to undertake profitable projects in the future.

Ultimately, the goal of these interrelated decisions is to maximize shareholder wealth while balancing risk and return. Financial managers must carefully assess the company's financial position, growth opportunities, and capital market conditions to strike an optimal balance between investment, financing, and dividend decisions. An efficient and well-structured interrelationship between these decisions can lead to a financially healthy and successful company in the long run. **2. (b)**

- <u>Alternative Investment Funds (AIF)</u>: Angel Fund Venture Capital Fund Private Equity Fund, and Hedge Funds
- Credit Rating Agencies in India: CRISIL Ratings Limited ICRA limited Care Ratings Limited India Ratings and Research Pvt. Ltd. (Formerly Fitch Ratings India Pvt. Ltd.)
- Money market Instruments Traded:

Call/Notice Money Treasury Bills Commercial Bills Certificate of Deposits Commercial Papers Inter-Bank Participation Certificates Inter Corporate Deposits Swaps

- Features of Treasury Bills:
 - (1) They are negotiable securities.
 - (2) They are highly liquid as they are of shorter tenure and there is the possibility of inter-bank repo among them.
 - (3) There is an absence of default risk.
 - (4) They have an assured yield, low transaction cost and are eligible for inclusion in the securities for SLR purposes.
- <u>Yield on Treasury Bills</u>:

$$Yield = \frac{100 - Purc hase Price}{Purc hase Price} \ge \frac{365 Days}{Days to Maturity} \ge 100$$

3. (a)

(i)

Working Capital Turnover Ratio =
$$\frac{16}{9}$$
 or 16:9

(ii)

Interest Coverage Ratio = 5 times

Trade Receivables Turnover Ratio = 5 times Return on Investment = 0.40 or 40%

3. (b)

Net Cash flow from Financing Activities = ₹ (1,38,000)

4. (a)

- (i) Overall weighted average (after tax) cost of additional finance = $K_0 = 0.16899$ or 16.899%
- (ii) Risk-Free Rate of Interest on Govt. Treasury Bonds = $R_f = 5\%$

4. (b)

The five basic principles of data ethics that a business organization should follow:

- (i) <u>Regarding ownership</u>: The first principle is that ownership of any personal information belongs to the person. It is unlawful and unethical to collect someone's personal data without their consent. The consent may be obtained through digital privacy policies or signed agreements or by asking the users to agree to terms and conditions. It is always advisable to ask for permission beforehand to avoid future legal and ethical complications. In case of financial data, some data may be sensitive in nature. Prior permission must be obtained before using the financial data for further analysis.
- (ii) <u>Regarding transparency</u>: Maintaining transparency is important while gathering data. The objective with which the company is collecting user's data should be known to the user. For example, is the company is using cookies to track the online behaviour of the user, it should be mentioned to the user through a written policy that cookies would be used for tracking user's online behaviour and the collected data will be stored in a secure database to train an algorithm to enhance user experience. After reading the policy, the user may decide to accept or not to accept the policy. Similarly, while collecting the financial data from clients, it should be clearly mentioned that for which purpose the data should be used.
- (iii) <u>Regarding privacy</u>: As the user may allow to collect, store and analyze personally identifiable information (PII), that does not imply it should be made publicly available. For companies, it is mandatory to publish some financial information to the public e.g. through annual reports. However, there may be many confidential information, which if fallen into the wrong hand may create problems and financial loss. Toprotect the privacy of data, a data security process should be in place. This may include file encryption and dual authentication password etc. The possibility of breach of data privacy may also be done through identifying datasets.
- (iv) <u>Regarding intention</u>: The intention of data analysis should never be to make profits out of others' weaknesses or for hurting others. Collecting data which is unnecessary for analysis should be avoided andit's unethical.
- (v) <u>Regarding outcomes</u>: In some cases, even if the intentions are good, the result of data analysis mayinadvertently hurt the clients and data providers. This is called disparate impact, which is unethical.

5. (a)

(i) The Indifference Point between Plan A and Plan B is at the EBIT level of ₹ 1,00,000.
Financial Break-Even Point (FBEP)
FBEP for Plan A = ₹ 60,000
FBEP for Plan B = ₹70,000
Comment: Since Financial BEP for Plan B is the highest, Plan B has the highest Financial Risk.

Domination of Plan: Plan A dominates Plan B as the financial BEP of Plan A is lower.

(ii) Market Price of Share as per Walter Model = \gtrless 140

Market Price under MM Model: = ₹ 104

The current dividend policy of the company is not satisfactory, due to the fact that the company is a growing company (since $r > K_e$) and it is not in its favour to pay its profit to the shareholders by way of dividends. Hence the optimum payout ratio for the company should be 0%.

5. (b)

Data cleaning is the process of correcting or deleting inaccurate, corrupted, improperly formatted, duplicate, or insufficient data from a dataset.

• <u>Steps for data cleaning</u>:

- (i) Step 1: Removal of duplicate and irrelevant information
- (ii) Step 2: Fix structural errors:
- (iii) Step 3: Filter unwanted outliers:
- (iv) Step 4: Handle missing data
- (v) Step 5: Validation and QA
- <u>Benefits of data cleaning</u> :
 - (i) Error correction when numerous data sources are involved.
 - (ii) Fewer mistakes result in happier customers and less irritated workers.
 - (iii) Capability to map the many functions and planned uses of your data.
 - (iv) Monitoring mistakes and improving reporting to determine where errors are originating can make it easier to repair inaccurate or damaged data in future applications.
 - (v) Using data cleaning technologies will result in more effective corporate procedures and speedier decision-making.

6. (a)

Annualized NPV under - Machine X ₹ 2,10,413 Machine Y ₹ 1,52,760

Recommendation: Machine X should be purchased since Machine X has a higher annualized NPV than That of Machine Y.

6. (b)

Selection of Projects on the basis of PI Ranking when Projects are Divisible

Project	Investment	PI Ranking	NPV
А	50,000	1	4,50,000
В	1,00,000	2	8,00,000
С	1,50,000	3	10,50,000
D	2,00,000	4	12,00,000
Е	2,50,000	5	13,75,000
F	2,60,000	6	14,04,000
	10,10,000		62,79,000

Selection of Projects when Projects are Indivisible

Combination 1

Projects	Investment	NPV Ranking	NPV
F	6,00,000	1	32,40,000
E	2,50,000	2	13,75,000
С	1,50,000	4	10,50,000
	10,00,000		56,65,000

Combination 2		
Project	Investment	NPV
А	50,000	4,50,000
С	1,50,000	10,50,000
D	2,00,000	12,00,000
F	6,00,000	32,40,000
	10,00,000	59,40,000

Recommendation: The company is advised to undertake projects A, C, D and F since the NPV of A, C, D and F is more than the NPV of any other combination and ₹10,000 will remain unspent

7. (a)

Net Working Capital = ₹ 32,77,396

7 (b).

Upper limit = \gtrless 21,23,245 Return Point = \gtrless 13,74,415 Average Cash Balance = \gtrless 14,99,220

8. (a)

(i) <u>Steps involved in using Data Visualisation in report design</u>

- 1. Find a story in the Data
- 2. Create a narrative
- 3. Choose the most suitable Data Visualisation
- 4. Follow the visual language
- 5. Publicize the report

(ii) **Objectives of Data Visualisation:**

- 1. Making a better data analysis:
- 2. Faster decision making
- 3. Analysing complicated data

(iii) Important issues which the presenter should keep in mind for effective data Visualisation.

- 1. Know the objective
- 2. Always keep the audience in mind
- 3. Invest in the best technology
- 4. Improve the team's ability to visualise data
- 5. Tools for visualising and presenting the data

(iv) <u>Any four Tools for visualising and presenting the data.</u>

Data visualisation is the visual depiction of data and information. Through the use of visual elements like dashboards, charts, graphs, and maps etc, data visualisation tools facilitate the identification and comprehension of trends, outliers, and patterns in data.

- 1. Dashboards
- 2. Bar charts
- 3. Histogram

- 4. Pie chart
- 5. Line chart
- 6. Maps
- 7. Gantt chart
- 8. Bubble Chart etc.

8. (b)

Data Presentation Architecture (DPA)

Meaning:

Data Presentation Architecture (DPA) is a set of skills that aims to identify, find, modify, format, and present data in a manner that ideally conveys meaning and provides insight. According to Kelly Lautt, "Data Presentation Architecture (DPA) is a rarely applied skill set critical for the success and value of Business Intelligence. Data presentation architecture weds the science of numbers, data and statistics in discovering valuable information from data and making it usable, relevant and actionable with the arts of data Visualisation, communications, organisational psychology and change management in order to provide business intelligence solutions with the data scope, delivery timing, format and Visualisations that will most effectively support and drive operational, tactical and strategic behaviour toward understood business (or organisational) goals. DPA is neither an IT nor a business skill set but exists as a separate field of expertise. Often confused with data Visualisation, data presentation architecture is a much broader skill set that includes determining what data on what schedule and in what exact format is to be presented, not just the best way to present data that has already been chosen (which is data Visualisation). Data Visualisation skills are one element of DPA."

Objectives of DPA

There are the following objectives of DPA:

- (i) Utilize data to impart information in the most efficient method feasible (provide pertinent, timely and comprehensive data to each audience participant in a clear and reasonable manner that conveys important meaning, is actionable and can affect understanding, behaviour and decisions).
- (ii) To utilise data to deliver information as effectively as feasible (minimise noise, complexity, and unneeded data or detail based on the demands and tasks of each audience).

Scope of DPA

In the light of abovementioned objectives, the scope of DPA may be defined as:

- (i) Defining significant meaning (relevant information) required by each audience member in every scenario.
- (ii) Obtaining the proper data (focus area, historic reach, extensiveness, level of detail, etc.)
- (iii) Determining the needed frequency of data refreshes (the currency of the data)
- (iv) Determining the optimal presentation moment (the frequency of the user needs to view the data)
- (v) Using suitable analysis, categorization, visualisation, and other display styles
- (vi) Developing appropriate delivery techniques for each audience member based on their job, duties, locations, and technological access.