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:** **[15×2 = 30]**

(i) A portfolio consisting of two risky securities can be made risk less i.e., Sp = 0, if:
   a. The securities are perfectly positively correlated
   b. The securities are perfectly negatively correlated
   c. If the correlation ranges between 0 to 1
   d. If the correlation ranges between -1 to +1.

(ii) In finance, _____ is the risk that a given security or asset cannot be traded quickly enough in the market to prevent a loss (or make the required profit).
   a. Credit Risk
   b. Market Risk
   c. Liquidity Risk
   d. Operational Risk

(iii) Which of the following is not a spontaneous source of short-term funds?
   a. Trade credit
   b. Accrued expenses
   c. Provision for dividend
   d. All of the above.

(iv) An analyst applied the DuPont System to the following data of a company: (a) equity turnover 4.2, (b) net profit margin 5.5%, (c) total assets turnover 2.0 and (d) dividend pay-out ratio 30%; the company's rate of return on equity is _____.
   a. 23.1%
   b. 27.3%
   c. 29.5%
   d. 25.1%

(v) Return on Assets and Return on Investment Ratios belong to:
   a. Liquidity Ratios
   b. Profitability Ratios
   c. Solvency Ratios

d.   **Turnover Ratios**

(vi) **The shares of a textile company are selling at ₹20 per share. The firm had paid ₹2 per share dividend last year. The estimated growth of the company is approximately 5 % per year. Determine the estimated market price of the equity shares if the anticipated growth rate of the firm rises to 8 %.**

a.   **₹26.5**

b.   **₹27.8**

c.   **₹22.5**

d.   **₹28.8**

(vii) **Y Co. Ltd. issues 10,000 12% preference shares of ₹100 each at a premium @ 10% but redeemable at a premium@ 20% after 5 years. The company pays under writing commission @ 5%. If tax on dividend is 12.5%, surcharge is 2.5% and education cess is 3%, calculate the cost of preference share capital.**

a.   **14.86%**

b.   **12.48%**

c.   **13.96%**

d.   **15.24%**

(viii) **The following information is given for a project:**
Annual cash inflow ₹8,00,000
Useful life 4 years
Pay - back period 2.855 years
The cost of the project would be-?

a.   **₹22,80,000**

b.   **₹22,86,000**

c.   **₹22,87,800**

d.   **₹22,84,000**

(ix) **ABC Ltd. has an estimated cash payment of ₹8,00,000 for a one-month period and the payments are expected to steady over the period. The fixed cost per transaction is ₹250 and the interest rate on marketable securities is 12% p.a. Calculate the optimum transaction size.**

a.   **6**

b.   **3**

c.   **4**

d.   **5**

	INTERMEDIATE EXAMINATION	SET 2
	MODEL ANSWERS	TERM – JUNE 2025
	PAPER – 11	SYLLABUS 2022

FINANCIAL MANAGEMENT AND BUSINESS DATA ANALYTICS

(x) Average collection period is 2 months, cash sales and average receivables are ₹5,00,000 and ₹6,50,000 respectively. The sales amount would be-:
   a. ₹44,00,000
   b. ₹48,50,000
   c. ₹42,00,000
   d. ₹40,00,000

(xi) Which of the following does not effect cash flows proposal?
   a. Salvage Value
   b. Method of Project Financing
   c. Tax Rate Change
   d. Depreciation Amount.

(xii) According to Gordon's Dividend Capitalisation Model, if the share price of a firm is ₹43, its dividend pay-out ratio is 60%, cost of equity is 9%, ROI is 12% and the numbers of shares are 12,000, what will be the net profit of the firm?
   a. ₹15,480
   b. ₹23,220
   c. ₹36,120
   d. ₹54,180

(xiii) The descriptive data may be deciphered as:
   a. May be deciphered in the form of qualitative information
   b. May be deciphered in the form of quantitative information
   c. May be deciphered in the form of information from informal sources
   d. All of the above

(xiv) Binomial distribution applies to attributes
   a. that are categorised into three mutually exclusive and exhaustive classes
   b. that are categorised into two mutually exclusive and exhaustive classes
   c. that are categorised into less than two mutually exclusive and exhaustive classes
   d. that are categorised into four mutually exclusive and exhaustive classes

(xv) Which of the following is/ are the technique/ techniques of data mining?
   a. Association rules
   b. Neural network
   c. Decision tree
   d. All of the above.

Answers:

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

Section – B

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

[5 x 14 = 70]

2. (a) **Interpret the different categories of NBFC registered with RBI.** **[7]**

   (b) **Describe the process of data mining along with its techniques.** **[7]**

Answer:

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

   (i) 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 auto-mobiles, tractors, lathe machines, generator sets, earth moving and material handling equipments, moving on own power and general purpose industrial machines.

   (ii) Investment Company (IC): IC means any company which is a financial institution carrying on as its principal business the acquisition of securities,

   (iii) 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.

   (iv) Infrastructure Finance Company (IFC): IFC is a non-banking finance company (a) which deploys at least 75% of its total assets in infrastructure loans, (b) has a minimum Net Owned Funds of ₹300crores, (c) has a minimum credit rating of 'A 'or equivalent (d) and a CRAR of 15%.

   (v) Systemically Important Core Investment Company (CIC-ND-SI): CIC-ND-SI is an NBFC carrying on the business of acquisition of shares and securities which satisfies the following conditions:- (a) it holds not less than 90% of its Total Assets in the form of investment in equity shares, preference shares, debt or loans in group companies; (b) its investments in the equity shares (including instruments compulsorily convertible into equity shares within a period not exceeding 10 years from the date of issue) in group companies constitutes not less than 60% of its Total

Assets; (c) it does not trade in its investments in shares, debt or loans in group companies except through block sale for the purpose of dilution or disinvestment; (d) it does not carry on any other financial activity referred to in Section 45I(c) and 45I(f) of the RBI act,1934 except investment in bank deposits, money market instruments, government securities, loans to and investments in debt issuances of group companies or guarantees issued on behalf of group companies. (e) Its asset size is ₹100 crores or above and (f) It accepts public funds

(vi) 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 Infra-structure Finance Companies (IFC) can sponsor IDF-NBFCs.

(vii) Non-Banking Financial Company - Micro Finance Institution (NBFC-MFI): NBFC-MFI is a non-deposit taking NBFC having not less than 85% of its assets in the nature of qualifying assets which satisfy the following criteria:

(a) Loan disbursed by an NBFC-MFI to a borrower with a rural household annual income not exceeding ₹1,00,000 or urban and semi-urban household income not exceeding ₹1,60,000;

(b) Loan amount does not exceed ₹50,000 in the first cycle and ₹1, 00,000 in subsequent cycles;

(c) Total indebtedness of the borrower does not exceed ₹1, 00,000;

(d) Tenure of the loan not to be less than 24 months for loan amount in excess of ₹ 15,000 with prepayment without penalty;

(e) Loan to be extended without collateral;

(f) Aggregate amount of loans, given for income generation, is not less than 50 per cent of the total loans given by the MFIs;

(g) Loan is repayable on weekly, fortnightly or monthly instalments at the choice of the borrower.

(viii) 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 % of its total assets and its income derived from factoring business should not be less than 50 percent of its gross income.

(ix) 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.

(x)　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)　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.

(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.

INTERMEDIATE EXAMINATION

MODEL ANSWERS

PAPER – 11

SET 2

TERM – JUNE 2025

SYLLABUS 2022

FINANCIAL MANAGEMENT AND BUSINESS DATA ANALYTICS

When this criterion is satisfied, companies can execute new strategies based on this understanding, therefore attaining their intended goals.

Techniques of data mining are as follows:

(i) Association rules:

An association rule is a rule-based technique for discovering associations between variables inside a given dataset. These methodologies are commonly employed for market basket analysis, enabling businesses to better comprehend the linkages between various items. Understanding client consumption patterns helps organisations to create more effective cross-selling tactics and recommendation engines.

(ii) Neural Networks:

Primarily utilised for deep learning algorithms, neural networks replicate the interconnection of the human brain through layers of nodes to process training data. Every node has inputs, weights, a bias (or threshold), as well as an output. If the output value exceeds a predetermined threshold, the node "fires" and passes data to the subsequent network layer.

(iii) Decision tree:

Using classification or regression algorithms, this data mining methodology classifies or predicts likely outcomes based on a collection of decisions. As its name implies, it employs a tree-like representation to depict the potential results of these actions.

(iv) K-nearest neighbour:

K-nearest neighbour, often known as the KNN algorithm, classifies data points depending on their closeness to and correlation with other accessible data. This technique assumes that comparable data points exist in close proximity to one another. Consequently, it attempts to measure the distance between data points, often by Euclidean distance, and then assigns some on the most common category or average.

3. (a) **From the following information, prepare a summarized Statement of Assets and Liabilities as on 31st March, 2025:**

(i) Working Capital	**₹1,20,000**
(ii) Reserves & Surplus	**₹80,000**
(iii) Bank Overdraft	**₹20,000**
(iv) Proprietary Ratio	**0.75**
(v) Current Ratio	**2.50**
(vi) Liquid Ratio	**1.50**

Your workings should form a part of your answer. [7]

(b) The Balance Sheets of a company as on 31st March, 2024 and 2025 are given below:

Liabilities	31.03.24	31.03.25	Assets	31.03.24	31.03.25
Equity Share Capital	14,40,000	19,20,000	Fixed Assets	38,40,000	45,60,000
Capital Reserve	--	48,000	Less: Depreciation	(11,04,000)	(13,92,000)
General Reserve	8,16,000	9,60,000		27,36,000	31,68,000
Profit & Loss A/c	2,88,000	3,60,000	Investment	4,80,000	3,84,000
9% Debentures	9,60,000	6,72,000	Sundry Debtors	12,00,000	14,00,000
Sundry Creditors	5,50,000	5,90,000	Stock	1,40,000	1,84,000
Bills Payable	26,000	34,000	Cash in hand	4,000	--
Proposed Dividend	1,44,000	1,72,800	Preliminary Expenses	96,000	48,000
Provision for tax	4,32,000	4,08,000			
Unpaid dividend	--	19,200			
	46,56,000	51,84,000		46,56,000	51,84,000

Additional Information:

During the year ended 31st March, 2025 the company:

1. Sold a machine for ₹1, 20,000; the cost of machine was ₹2, 40,000 and depreciation provided on it was ₹84,000.
2. Provided ₹4, 20,000 as depreciation on fixed assets.
3. Sold some investment and profit credited to capital reserve.
4. Redeemed 30% of the debenture @ 105.
5. Decided to write off fixed assets costing ₹60,000 on which depreciation amounting to ₹48,000 has been provided.
6. You are required to prepare Cash Flow Statement as per Ind AS-7. [7]

Answer:

3. (a) Working Notes:

(i) Current Ratio = Current Assets (CA)/Current Liabilities(CL)

= 2.50 i.e., 2.5:1.0 Working Capital = ₹1, 20, 000

Current Assets / Current Liabilities = 2.5

CA = 2.5 CL

CA – CL	= 1, 20,000
2.5 CL – CL	= 1, 20,000
1.5 CL	= 1, 20,000
CL	= 1, 20,000
1.5	= ₹80,000
CA	= 2.5 CL
	= 2.5 × 80,000
	= ₹2, 00,000

Note:

Bank Overdraft	= ₹20,000 Other
CL	= ₹60,000 (balancing figure)
CL	= ₹80,000

(ii) Liquid Ratio = Quick Assets/CL (Excluding Overdraft)

= 1.50 i.e., 1.50:1.00

1.0 - ₹60,000

1.5 -?

(1.5/1.00) × 60,000 = ₹90,000 (Quick Assets)

Stock = CA - Quick Assets

= 2, 00,000 – 90,000　　= ₹1, 10,000

(iii) Proprietary Ratio = (Fixed Assets/ Proprietary Funds) = 0.75 i.e.,

Working capital/ Proprietary Funds = 0.25

Proprietary Funds = (1/0.25) × 1, 20,000 = ₹4, 80,000

Less: Reserves & Surplus = ₹80,000

Share Capital = ₹4, 00,000

(iv) Fixed Assets = 4, 80,000 × 0.75 = ₹3, 60,000.

Summarized Statement of Assets and Liabilities as on 31st March, 2025

Liabilities	₹	Assets	₹
Share capital	4,00,000	Fixed Assets	3,60,000
Reserves & Surplus	80,000	Current Assets :	
Current Liabilities:		Stock　　　1,10,000	
Bank Overdraft　20,000		Quick Assets　　90,000	2,00,000
Other C.L　　　60,000	80,000		
Total	5,60,000	Total	5,60,000

(b)   **Cash Flow Statement for the year ending 31st March, 2025**

	Particulars	(₹)	(₹)
A	Cash Flows from Operating Activities		
	Profit and Loss A/c (3,60,000 – 2,88,000)		72,000
	Adjustments:		
	Increase in General Reserve	1,44,000	
	Depreciation	4,20,000	
	Provision for Tax	4,08,000	
	Loss on Sale of Machine	36,000	
	Premium on Redemption of Debentures	14,400	
	Proposed Dividend	1,72,800	
	Preliminary Expenses written off	48,000	
	Fixed Assets written off	12,000	
	Interest on Debentures	60,480	
	Funds from Operations		<u>13,15,680</u>
	Increase in Sundry Creditors	40,000	13,87,680
	Increase in Bills Payable	8,000	
	Increase in Sundry Debtors	48,000	
	Increase in Stock	(2,00,000)	
	Cash before tax	<u>(44,000)</u>	<u>(1,96,000)</u>
	Less: Tax paid		11,91,680
			4,32,000
	Cash in flows from Operating Activities		7,59,680
B	Cash in flows from Investing Activities		
	Purchase of Fixed Assets (10,20,000)	(10,20,000)	
	Sale of Investment 1,44,000	1,44,000	
	Sale of Fixed Assets 1,20,000	1,20,000	
	Cash out flows from Investing Activities		(7,56,000)
C	Issue of share capital	4,80,000	
	Redemption of Debentures	(3,02,400)	
	Dividend Paid (1,44,000 – 19,200)	(1,24,800)	
	Interest on Debentures	(60,480)	
	Cash outflow from Financing Activities		(7,680)
	Net Increase in Cash and Cash Equivalents		
	Cash and Cash Equivalents at the beginning of the year		(4,000)
	Cash and Cash Equivalents at the end of the year		4,000

- It is presumed that the 30% debentures have been redeemed at the beginning of the year.

Dr.   Fixed Assets Account   Cr.

Particulars	Amount (₹)	Particulars	Amount (₹)
To, Balance b/d	27,36,000	By, Cash	1,20,000
To, Purchases (balance figure)	10,20,000	By, Loss on sales	36,000
		By, Depreciation	4,20,000
		By, Assets written off	12,000
		By, Balance c/d	31,68,000
	37,56,000		37,56,000

4. (a) **The following are the Balance Sheet of Maharaj Ltd. as on 31.03.24 and 31.03.25:**

Particulars	31.03.24 (₹)	31.03.25 (₹)
Current Assets:		
Cash and Bank Balance	23,600	2,000
Debtors	41,800	38,000
Inventory	32,000	26,000
Other Current Assets	6,400	2,600
Total Current Assets (A)	1,03,800	68,600
Fixed Assets :		
Land and Building	54,000	34,000
Plant and Machinery	62,000	1,57,200
Furniture	5,800	9,600
Total Fixed Assets (B)	1,21,800	2,00,800
Long-term Investment (C)	9,200	11,800
Total Assets (A + B + C)	2,34,800	2,81,200
Current Liabilities (D)	52,400	25,400
Long-term Debt (E)	40,000	65,000
Owners' Equity:		
Equity Share Capital	80,000	1,20,000
Reserve and Surplus	62,400	70,800
Total Owners' Equity(F)	1,42,400	1,90,800
Total Liabilities and Capital (D+E+ F)	2,34,800	2,81,200

Prepare Comparative Balance Sheet and study its financial position.   **[7]**

(b) The following is the capital structure of ABC Ltd. as on 31.12.2024

Sources of Finance	(₹)
Equity Shares: 5000 shares (of ₹100 each)	5,00,000
10% Preference Shares (of ₹100 each)	2,00,000
12% Debentures	3,00,000
	10,00,000

The market price of the company's share is ₹110 and it is expected that a dividend of ₹10 per share would be declared for the year 2024. The dividend growth rate is 6%:

1. If the company is in the 40% tax bracket, compute the weighted average cost of capital.

2. Assuming that in order to finance an expansion plan, the company intends to borrow a fund of ₹5 lakhs bearing 14% rate of interest, what will be the company's revised weighted average cost of capital? This financing decision is expected to increase dividend form ₹10 to ₹12 per share. However, the market price of equity share is expected to decline form ₹110 to ₹105 per share. **[7]**

Answer:

4. (a) Comparative Balance Sheet of Maharaj Ltd. as on 31.03.2024 and 31.03.2025

	31.03.24 (₹)	31.03.25 (₹)	Amount of increase (+) or decrease (-) (₹)	Percentage increase (+) or decrease (-)
Cash and Bank Balance	23,600	2,000	(–) 21,600	(–) 91.5
Debtors	41,800	38,000	(–) 3,800	(–) 9.1
Inventory	32,000	26,000	(–) 6,000	(–) 18.8
Other Current Assets	6,400	2,600	(–) 3,800	(–) 59.4
(A)	1,03,800	68,600	(–) 35,200	(–) 33.9
Fixed Assets:				
Land and Building	54,000	34,000	(–) 20,000	(–) 37
Plant and Machinery	62,000	1,57,200	(+) 95,200	(+) 153.5
Furniture	5,800	9,600	(+) 3,800	(+) 65.5
(B)	1,21,800	2,00,800	(+) 79,000	(+) 64.9
Long-term investment (C)	9,200	11,800	(+) 2,600	(+) 28.3
Total assets (A + B + C)	2,34,800	2,81,200	(+) 46,400	(+) 19.8
Current Liabilities (D)	52,400	25,400	(–) 27,000	(–) 51.5

Long-term debt (E)	40,000	65,000	(+) 25,000	(+) 62.5
Owners' Equity:				
Equity share capital	80,000	1,20,000	(+) 40,000	(+) 50.0
Reserve and surplus	62,400	70,800	(+) 8,400	(+) 13.5
(F)	1,42,400	1,90,800	(+) 48,400	(+) 34

Interpretation of Results:

Comparative balance sheet shows the balance of different assets and liabilities of two different periods of same company and shows absolute increase / decrease of each item in 2024-25 over 2023-24 and also shows the percentage change. Interpretations of these changes are as follows:

(i) The current assets of Maharaj Ltd. have decreased by ₹35,200 in the year 2024-25 over 2023-24, whereas current liabilities have decrease by ₹27,000 only. But it has no adverse effect on short term liquidity or on current ratio because current assets have decreased by 33.9% and current liabilities have decreased by 51.5%.

(ii) Cash and Bank balance have decreased by 91.5% during the study period. It implies an adverse cash position of the company. The company may face problem in meeting its short-term obligations.

(iii) The long-term debt of the company has increased by 62.5%, whereas its owners' equity has improved by 34% only. It implies that the financial risk (in terms of dependency on outsiders and in terms of contractual obligation) associated with the company has increased significantly during the period under study.

(iv) There has been a substantial increase in the fixed assets by the company. The fixed assets have increased by ₹79,000 (64.9%). This is mainly due to significant increase in the plant and machinery of the company. The plant and machinery have increased by ₹95,200 (153.5%). It indicates a remarkable improvement in the production capacity of the company during the study period. Such cost of assets has financed by proprietors' fund and long-term loan raised. It indicates the long-term stability of the business.

(b) (i) Computation of the Weighted Average Cost of Capital (using market value weights)

Source of Finance (a)	Market value of capital (₹)	Weight (b)	After tax cost of capital (%) (c)	WACC (%) (d)=(b)×(c)
Equity Share (working note 1) [₹110 × 5000 shares]	5,50,000	0.5238	15.09	7.9041
10% Preference Share	2,00,000	0.1905	10.00	1.9050
12% Debenture	3,00,000	0.2857	6.00	1.7142
Total	10,50,000	1.0000		11.5233

(ii) Computation of Revised Weighted Average Cost of Capital (using market value weights)

Source of Finance (a)	Market value of capital (₹)	Weight (b)	After tax cost of capital (%) (c)	WACC(%) (d)=(b)×(c)
Equity Share (working note 1) [₹105 × 5000 shares]	5,25,000	0.3443	17.43	6.0011
10% Preference Share	2,00,000	0.1311	10.00	1.3110
12% Debenture	3,00,000	0.1967	6.00	1.1802
14% Loan	5,00,000	0.3279	7.00	2.2953
Total	15,25,000	1.0000		10.7876

Working Notes:

i. Cost of equity shares (k_e)

$$k_e = \frac{\text{Dividend per share } (D_1)}{\text{Market price per share } (P_0)} + \text{Growth rate } (g)$$

$$k_e = \frac{10}{110} + 0.06 = 0.1509 \text{ or } 15.09\%$$

$$\frac{12}{115} + 0.06 = 17.4285 \text{ or } 17.43\%$$

5. (a) **Electromatic Excellers Ltd. specialise in the manufacture of novel transistors. They have recently developed technology to design a new radio transistor capable of being used as an emergency lamp also. They are quite confident of selling all the 8,000 units that they would be making in a year. The capital equipment that would be required will cost ₹25 lakhs. It will have an economic life of 4 years and no significant terminal salvage value.**

During each of the first four years promotional expenses are planned as under:

1 st Year	1	2	3	4
Advertisement	1,00,000	75,000	60,000	30,000
Others	50,000	75,000	90,000	1,20,000
Variable cost of production and selling expenses: ₹250 per unit				

Additional fixed operating costs incurred because of this new product are budgeted at ₹75,000 per year.

The company's profit goals call for a discounted rate of return of 15% after taxes on

investments on new products. The income tax rate on an average works out to 40%. You can assume that the straight line method of depreciation will be used for tax and reporting. Assess the initial selling price per unit of the product that may be fixed for obtaining the desired rate of return on investment. Present value of annuity of ₹1 received or paid in a steady stream throughout 4 years in the future at 15% is 3.0079.

[7]

(b) Modern Enterprises Ltd. is considering the purchase of a new computer system for its research and development division, which would cost ₹35 lakh. The operation and maintenance costs (excluding depreciation) are expected to be ₹7 lakh per annum. It is estimated that the useful life of the system would be 6 years, at the end of which the disposal value is expected to be ₹1 lakh.

The tangible benefits expected from the system in the form of reduction in design and draftsmanship costs would be ₹12 lakh per annum. The disposal of used drawing office equipment and furniture initially is anticipated to net ₹9 lakh.

As capital expenditure in research and development, the proposal would attract a 100% write-off for tax purposes. The gains arising from disposal of used assets may be considered tax free. The effective tax rate is 35%. The average cost of capital of the company is 12%.

After appropriate analysis of cash flows, advise the company of the financial viability of the proposal. Ignore tax on salvage value. [7]

Answer:

5. **(a)** Computation of selling price in order to get a return of 15%.

Let 'x' be the selling price, then sales will be 8000x

. Sales	8000x
Variable Cost [8000 × 250]	20,00,000
Contribution	8000x – 20,00,000
Fixed Cost [Adv. + Others]	-1,50,000
Additional Fixed Cost	-75,000
Depreciation [25,00,000 ÷ 4]	-6,25,000
	8000x – 28,50,000
Tax @ 40%	-3200x – 11,40,000
	4800x – 17,10,000
(+) Depreciation	6,25,000
CIF	4800x – 10,85,000

CIF for a period of 4 years and the required return on investment is 15% CUM

CIF for Annuity factor @ 15% (given) = 3.0079 P.V. of CIF Disc @ 15% for 4 years

must be atleast = 25,00,000 ∴ 3.0079 × (4800x − 10,85,000) = 25,00,000

14438x − ₹32,63,572 = 25,00,000

14438x = ₹25,00,000 + 32,63,572

14438x = ₹57,63,572

x = ₹399.19

Selling price must be at least ₹399.19 = ₹400.

(b)

Assessment of Financial Viability of proposal	(₹ in lakh)
Incremental cash outflows	
Cost of new computer system	35
Less: Sale proceeds from drawing office equipment and furniture	9
	26
Incremental CFAT and NPV:	
(a) Cost savings (years 1–6)	
Reduction in design and draftsmanship costs	12
Less: Operation and maintenance costs	7
Cost savings (earnings) before taxes	5
Less: Taxes (0.35)	1.75
Earnings after taxes (CFAT)	3.25
(×) PV factor of annuity for 6 years (0.12)	× 4.111
Total PV of cost savings	13.36
(b) Tax savings on account of depreciation	
Cost of new computer system (₹35 lakhs × 0.35)	12.25
(×) PV factor for year 1	× 0.892
Total PV	9.93
(c) Terminal salvage value at the end of year 6 (₹1 lakh × 0.507)	0.507
(d) Gross PV of CFAT [(a) + (b) + (c)]	24.797
Less: Cash outflows	26.000
NPV	(1.203)

Recommendation: Since NPV is negative, the proposal is not financially viable.

6.   **(a)**   From the following projections of XYZ Ltd for the next year, you are required to work out the working capital (WC) required by the company.

Annual sales	14,40,000
Cost of production including depreciation, ` 120000	12,00,000
Raw material purchases	7,05,000
Monthly expenses	30,000
Anticipated opening stock of raw materials	1,40,000
Anticipated closing stock of raw materials	1,25,000
Inventory norms:	
Raw material (month)	2
Work-in-progress (days)	15
Finished goods (month)	1

The firm enjoys a credit of 15 days on its purchases, and allows 1 month's credit on its supplies. The company has received an advance of ₹15,000 on sales orders.

You may assume that production is carried on evenly throughout the year, and the minimum cash balance desired to be maintained is ₹10,000.   **[7]**

(b)   XYZ Corporation whose current sales are in the region of ₹6 lakh per annum and an average collection period of 30 days wants to pursue a more liberal policy to improve sales. A study made by a management consultant reveals the following information;

The selling price per unit is ₹3. Average cost per unit is ₹2.25 and variable costs per unit are ₹2. The current bad debt loss is 1%. Required return on additional investment is 20%. Assume a 360 days year. Which of the above policies would you recommend for adoption?   **[7]**

Answer:

6. (a)

Statement showing determination of net working capital (NWC)	(₹)	(₹)
(A) **Current assets:**		
Cash balance		10,000
Inventories:		
Raw materials: Opening stock	1,40,000	
Add purchases	7,05,000	
Less closing stock	<u>1,25,000</u>	
Annual consumption	7,20,000	
Two months requirements = (₹720000 × 2 / 12)		1,20,000

Work-in-process (yearly cost of production excluding dep.) : (₹12,00,000 – ₹1,20,000) [₹10,08,000* × 1)/(2 × 12)]	
Finished goods (₹10,80,000)/12	45,000
Debtors (₹10,80,000)/12	90,000
Total	90,000**
(B) **Current liabilities:**	3,55,000
Trade creditors (₹7,05,000 ×1 / 2 × 1 / 12)	29,375
Advances received from debtors	
Total	15,000
	44,375
Not Working Capital (A – B)	3,10,625

*[₹7, 20,000 + ₹3, 60,000 (monthly expenditure, ₹30,000 × 12)]

**It is assumed that there is neither a opening nor closing stock of finished goods and, therefore, cost of sales is ₹10, 80,000, excluding depreciation.

(b)   Statement showing the Evaluation of Debtors Policies (Total Approach)

Particulars	Present Policy 30 days (₹)	Proposed Policy A 40 days (₹)	Proposed Policy B 50 days (₹)	Proposed Policy C 60 days (₹)	Proposed Policy D 75 days (₹)
Expected Profit					
(a) Credit Sales	6,00,000	6,30,000	6,48,000	6,75,000	6,90,000
(b) Total Cost other than Bad Debts					
(i) Variable Costs [Sales × ₹2/₹3]	4,00,000	4,20,000	4,32,000	4,50,000	4,60,000
(ii) Fixed Costs	50,000	50,000	50,000	50,000	50,000
	4,50,000	4,70,000	4,82,000	5,00,000	5,10,000
(c) Bad Debts	6,000	9,450	12,960	20,250	27,600
(d) Expected Profit [(a) - (b)-(c)]	1,44,000	1,50,550	1,53,040	1,54,750	1,52,400
Opportunity Cost of Investments in Receivables	7,500	10,444	13,389	16,667	21,250

Recommendation: The Proposed Policy A (i.e., increase in collection period by 10 days or total 40 days) should be adopted since the net benefits under this policy are higher as compared to other policies.

Working Notes:

(i) Fixed Cost = [Average Cost per unit - Variable Cost per unit] × No. of units sold

= [₹2.25 – ₹2.00] × (₹6, 00,000/3)

= ₹0.25 × 2, 00,000 = ₹50,000

(ii) Opportunity Cost of Average Investments

Total Cost of Credit Sales × $\dfrac{\text{Collection period (Days)}}{365 \text{ (or 360)}}$ × $\dfrac{\text{Required Rate of Return}}{100}$

Present Policy = (4, 50,000 × 30 / 360) × (20 / 100) = ₹7,500

Policy A = (4, 70,000 × 40 / 360) × (20 / 100) = ₹10,444

Policy B = (4, 82,000 × 50 / 360) × (20 / 100) = ₹13,389

Policy C = (5, 00,000 × 60 / 360) × (20 / 100) = ₹16,667

Policy D = (5, 10,000 × 75 / 360) × (20 / 100) = ₹ 21,250

7. (a) **Alfa Ltd with net operating earnings of ₹3, 00,000 is attempting to evaluate a number of possible capital structures, given below. Which of the capital structure will you recommend, and why?**

Capital structure	Debt in capital structure (₹)	Cost of debt (K_i) (per cent)	Cost of equity (K_e) (per cent)
1	3,00,000	10	12
2	4,00,000	10	12.5
3	5,00,000	11	13.5
4	6,00,000	12	15
5	7,00,000	14	18

[7]

(b) **Calculate operating leverage and financial leverage under situations A, B and C and financial plans 1, 2 and 3 respectively from the following information relating to the operation and capital structure of X, Y, Z Ltd. Also find out the combinations of operating and financial leverage which give the highest value and the least value.**

Installed capacity (units)	1,200
Actual production and sales (units)	800
Selling price per unit (₹)	15
Variable cost per unit (₹)	10
Fixed costs (₹):	
Situation A	1,000
Situation B	2,000
Situation C	3,000

Particulars	Financial Plan		
	1 (₹)	2 (₹)	3 (₹)
Equity (₹)	5,000	7,500	2,500
Debt (₹)	5,000	2,500	7,500
Cost of debt (for all plans) (%)	12		

[7]

Answer:

7. (a) Determination of capital structure

Particulars	Capital structure plans				
	1 (₹)	2 (₹)	3 (₹)	4 (₹)	5 (₹)
EBIT	3,00,000	3,00,000	3,00,000	3,00,000	3,00,000
Less interest ($K_i \times B$)	30,000	40,000	55,000	72,000	98,000
Net Income (NI) for equity holders	2,70,000	2,60,000	2,45,000	2,28,000	2,02,000
K_e (equity capitalisation rate)	0.12	0.125	0.135	0.150	0.180
S (market value of equity)	22,50,000	20,80,000	18,14,815	15,20,000	11,22,222
B (market value of debt)	3,00,000	4,00,000	5,00,000	6,00,000	7,00,000
Total market value (S + B) = V	25,50,000	24,80,000	23,14,815	21,20,000	18,22,222
Overall cost of capital (K_O) = EBIT/V (percent)	11.76	12.10	12.96	14.15	16.47

Capital structure having debts of ₹3,00,000 is recommended as the overall cost of capital at this level is the lowest.

(b)

Determination of operating leverage			
Particulars	Situations		
	A	B	C
Sales level (units)	800	800	800
Sales revenue	₹12,000	₹12,000	₹12,000
Less: Variable costs	8,000	8,000	8,000
Less: Fixed cost	1,000	2,000	3,000
Operating profits (EBIT)	3,000	2,000	1,000
DOL =	1.33	2	4

Determination of Financial leverage			
Particulars	Financial Plan		
	1	2	3
Situation A:			
EBIT (₹)	3,000	3,000	3,000
Less: Interest (₹)	600	300	900
Earnings after interest (₹)	2,400	2,700	2,100

Determination of Financial leverage			
Particulars	Financial Plan		
	1	2	3
Financial leverage (EBIT/EBIT – I)	1.25	1.11	1.43
Situation B:			
EBIT (₹)	2,000	2,000	2,000
Less: Interest (₹)	600	300	900
Earnings after interest (₹)	1,400	1,700	1,100
Financial leverage	1.43	1.18	1.82
Situation C:			
EBIT (₹)	1,000	1,000	1,000
Less: Interest (₹)	600	300	900
Earnings after interest (₹)	400	700	100
Financial leverage	2.5	1.43	10

Determination of the highest and the lowest value of combined leverage (Combined leverage = DOL × DFL)			
Particulars	Financial Plan		
	1	2	3
A	1.66	1.48	1.90
B	2.86	2.36	3.64
C	10.00	5.72	40.00

The above calculations suggest that the highest value is in situation C financed by plan 3 and the lowest value is in situation A financed by plan 2.

8. (a) **Interpret the various types of data used in Finance and Costing.** [7]

   (b) **Explain the steps of data cleaning.** [7]

Answer:

8. (a) Data plays a very important role in the study of finance and cost accounting. From the inception of the study of finance, accounting and cost accounting, data always played an important role. Be it in the form of financial statements, or cost statements etc. the finance and accounting professionals played a significant role in helping the management to make prudent decisions. 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.

   There is another way of classifying the types of data. The data may be classified also as:
   (i) Nominal

(ii)   Ordinal

(iii)   Interval

(iv)   Ratio

Each gives a distinct set of traits that influences the sort of analysis that may be conducted.

The differentiation between the four scale types is based on three basic characteristics:

(A) Whether the sequence of answers matters or not

(B) Whether the gap between observations is significant or interpretable, and

(C) The existence or presence of a genuine zero.

We will briefly discuss these four types below:

(i)   Nominal Scale: Nominal scale is being used for categorising data. Under this scale, observations are classified based on certain characteristics. The category labels may contain numbers but have no numerical value.

Examples could be, classifying equities into small-cap, mid-cap, and large-cap categories or classifying funds as equity funds, debt funds, and balanced funds etc.

(ii)   Ordinal Scale: Ordinal scale is being used for classifying and put it in order. The numbers just indicate an order. They do not specify how much better or worse a stock is at a specific price compared to one with a lower price. For example, the top 10 stocks by P/E ratio.

(iii)   Interval scale: Interval scale is used for categorising and ranking using an equal interval scale. Equal intervals separate neighbouring scale values. As a result of scale's arbitrary zero point, ratios cannot be calculated. For example, temperature scales. The temperature of 40 degrees is 5 degrees higher than that of 35 degrees. The issue is that a temperature of 0 degrees Celsius does not indicate the absence of temperature.

A temperature of 20 degrees is thus not always twice as hot as a temperature of 10 degrees.

(iv)   Ratio scale: The ratio scale possesses all characteristics of the nominal, ordinal, and interval scales. The acquired data can not only be classified and rated on a ratio scale, but also have equal intervals. A ratio scale has a true zero, meaning that zero has a significant value. The genuine zero value on a ratio scale allows for the magnitude to be described. For example, length, time, mass, money, age, etc. are typical examples of ratio scales. For data analysis, a ratio scale may be utilised to measure sales, pricing, market share, and client count.

(b)   Steps for data cleaning:

    (i)   Step 1: Removal of duplicate and irrelevant information

Eliminate unnecessary observations from your dataset, such as duplicate or irrelevant observations. Most duplicate observations will occur during data collecting. When you merge data sets from numerous sites, scrape data, or get data from customers or several departments, there are potential to produce duplicate data. De-duplication is one of the most important considerations for this procedure. Observations are deemed irrelevant when they do not pertain to the specific topic you are attempting to study. For instance, if you wish to study data pertaining to millennial clients but your dataset contains observations pertaining to earlier generations, you might exclude these useless observations. This may make analysis more effective and reduce distractions from your core objective, in addition to producing a more manageable and effective dataset.

    (ii)   Step 2: Fix structural errors:

When measuring or transferring data, you may detect unusual naming standards, typos, or wrong capitalization. These contradictions may lead to mislabeled classes or groups. For instance, "N/A" and "Not Applicable" may both be present, but they should be examined as a single category.

    (iii)   Step 3: Filter unwanted outliers:

Occasionally, you will encounter observations that, at first look, do not appear to fit inside the data you are evaluating. If you have a valid cause to eliminate an outlier, such as erroneous data input, doing so will improve the performance of the data you are analysing. Occasionally, though, the arrival of an outlier will prove a notion you're working on. Remember that the existence of an outlier does not imply that it is erroneous. This step is required to validate the number. Consider deleting an outlier if it appears to be unrelated to the analysis or an error.

    (iv)   Step 4: Handle missing data

Many algorithms do not accept missing values, hence missing data cannot be ignored. There are several approaches to handle missing data. Although neither is desirable, both should be explored.

As a first alternative, the observations with missing values may be dropped, but doing so may result in the loss of information. This should be kept in mind before doing so.

As a second alternative, the missing numbers may be entered based on other observations. Again, there is a chance that the data's integrity may be compromised, as action may be based on assumptions rather than real observations.

    (v)   Step 5: Validation and QA

As part of basic validation, one should be able to answer the following questions at the conclusion of the data cleansing process:

INTERMEDIATE EXAMINATION

SET 2

MODEL ANSWERS

TERM – JUNE 2025

PAPER – 11

SYLLABUS 2022

FINANCIAL MANAGEMENT AND BUSINESS DATA ANALYTICS

Does the data make sense?

Does the data adhere to the regulations applicable to its field?

Does it verify or contradict your working hypothesis, or does it shed any light on it?

Can data patterns assist you in formulating your next theory?

If not, is this due to an issue with data quality?

False assumptions based on inaccurate or "dirty" data can lead to ineffective company strategies and decisions. False conclusions might result in an uncomfortable moment at a reporting meeting when it is shown that the data does not withstand inspection. Before reaching that point, it is essential to establish a culture of data quality inside the firm. To do this, one should specify the methods that may be employed to establish this culture and also the definition of data quality.