Mock Test Paper - Series I: March, 2025

Date of Paper: 12h March, 2025

Time of Paper: 2 P.M. to 5 P.M.

FINAL COURSE: GROUP – I

PAPER – 2: ADVANCED FINANCIAL MANAGEMENT

Time Allowed – 3 Hours **Maximum Marks – 100**

1. *The question paper comprises two parts, Part I and Part II.*
2. *Part I comprises Case Scenario based Multiple Choice Questions (MCQs)*
3. *Part II comprises questions which require descriptive type answers.*

PART I – Case Scenario based MCQs (30 Marks)

Part I is compulsory.

Case Scenario I

Mr. Ramesh, a 40-year-old investor, has invested ₹10,00,000 in an actively managed Equity Mutual Fund. The fund has an Expense Ratio of 2.50% and follows the Nifty 50 Index as its benchmark. Upon analyzing the Fund details, he comes across the concept of Tracking Error (TE) and finds out that the same Fund has a Tracking Error (TE) of 3.20%.

A few months later, Mr. Ramesh receives a notification that the Fund has implemented Side Pocketing. The Fund has an exposure of 15% of his investment in a debt instrument of XYZ Ltd, a company facing a severe financial crisis. Since XYZ Ltd has defaulted on its payments, the Fund Manager has moved this portion into a side pocket.

Following the decision of Fund Manager, Mr. Ramesh decides to reconsider any of the following option:

1. Should he stay invested in this Fund and wait for the Side-Pocketed assets to recover?
2. Should he switch to a Passive Index Fund that has a lower Tracking Error and lower Expense Ratio
3. Should he redeem his remaining liquid holdings and invest in a better-performing actively Managed Fund?

Based on the above scenario and given his current situation, choose the most appropriate answer for the following multiple-choice questions:

1. Is it necessary for investors to pay close attention to the Expense Ratio of a Mutual Fund because……..

   (A) a high expense ratio can significantly reduce net returns over time.

   (B) a higher expense ratio always guarantees better fund performance.

   (C) the expense ratio only matters in the first year of investment.

   (D) funds with higher expense ratios are always risk-free.

2. The Fund has been ……. in replicating return on Nifty 50.

   (A) Successful

   (B) Unsuccessful

   (C) Can't say

   (D) Data is insufficient

3. After the decision of Fund Manager for side-pocketing the equivalent portion of Mr. Ramesh's investment shall_____

   (A) remains illiquid until the Fund Manager decides to sell it or the company recovers.

   (B) be immediately written off, and the Mr. Ramesh loses that portion.

   (C) be returned to Mr. Ramesh in proportion to his holdings.

   (D) be moved into a different Mutual Fund Scheme with no risk.

4. If Mr. Ramesh switches to a Passive Index Fund with an expense ratio of 0.8%, then he will save annually compared to his current Expense Ratio of 2.50%?

   (A) ₹ 8,000

   (B) ₹ 10,000

   (C) ₹ 17,000

   (D) ₹ 18,000

5. The advantage for Mr. Ramesh to switch over to a Passive Index Fund shall be____

   (A) lower expense ratio and lower tracking error.

   (B) guaranteed recovery of side-pocketed assets.

(C) higher risk exposure compared to active funds.

(D) avoiding capital gains tax on redemption. **(5 x 2 = 10 Marks)**

Case Scenario II

On 20.10.2024, the credit balance of an Indian bank in NOSTRO account with LMN Bank in London was £ 1,60,000 and the overbought position was £ 1,00,000. During the day, the following transactions have taken place.

Events	Time	Amount (£)
DD Purchased	11:08	50,000
Purchased a bill on London	11:50	150,000
Sold forward TT	13:15	100,000
Forward purchased contract cancelled	13:55	50,000
Remitted by TT	14:45	85,000
Draft in London cancelled	15:00	40,000

Based on the above scenario, choose the most appropriate answer for the following multiple-choice questions:

6. How much was the total amount of purchase commitments made during the day by the Indian Bank?

   (A) £ 2,00,000

   (B) £ 1,50,000

   (C) £ 3,40,000

   (D) £ 50,000

7. The final cash balance in the NOSTRO account at the end of 20.10.24 stands at ……

   (A) £ 85,000

   (B) £ 75,000

   (C) £ 20,000

   (D) £ 160,000

8. The transaction took place at …….shall affect both exchange & cash position of the bank with LMN Bank.

   (A) 11:08

   (B) 11:50

(C) 14:45

(D) 15:00

9. If at the end of day bank is required to maintain a credit balance of £ 20,000 in the NOSTRO account, then it……

(A) shall buy forward £ 15,000

(B) shall sell spot TT £ 55,000

(C) shall buy spot TT £ 55,000

(D) shall sell forward £ 55,000

10. If bank takes required steps to maintain a credit balance of £ 20,000 in the Nostro account, then what additional step was required to achieve the overbought position of £ 65,000?

(A) Buying forward £ 15,000

(B) Selling forward £ 65,000

(C) Buying forward £ 60,000

(D) Selling forward £ 15,000 **(5 x 2 = 10 Marks)**

Case Scenario III

Following Financial data are available for PQR Ltd. for the financial year ending 2023:

	(₹ in lakh)
8% Debentures	125
10% Bonds (2022)	50
Equity Shares (₹ 10 each)	100
Reserves and Surplus	300
Total Assets	600
Assets Turnovers ratio	1.1
Effective interest rate	8%
Effective tax rate	40%
Operating margin	10%
Dividend payout ratio	16.67%
Current market Price of Share	₹ 14
Required rate of return of investors	15%

From the information given above, choose the correct answer to the following questions:

11. Amount of retained earnings for the financial year 2023 approximately is……..

    (A) ₹ 26.00 lakh

    (B) ₹ 5.20 lakh

    (C) ₹ 52.00 lakh

    (D) ₹ 31.20 lakh

12. 10% Bonds must have been issued in the month of…….

    (A) July 2022

    (B) June 2022

    (C) August 2022

    (D) May 2022

13. Fair price of share of PQR Ltd. using Dividend Discount Model shall be approximately…….

    (A) ₹ 6.12

    (B) ₹ 6.51

    (C) ₹ 10

    (D) ₹ 14

14. Sustainable Growth Rate of PQR Ltd. shall be approximately……..

    (A) 10.00%

    (B) 6.50%

    (C) 15.00%

    (D) 7.80%

15. Return on Equity (ROE) of PQR Ltd. is……..

    (A) 7.80%

    (B) 6.50%

    (C) 10.00%

    (D) 15.00% **(5 x 2 = 10 Marks)**

PART – II DESCRIPTIVE QUESTIONS

Question No.1 is compulsory. Candidates are required to answer any four questions from the remaining five questions.

Working notes should form part of the answers.

Maximum Marks – 70 Marks

1. (a) Following are the details of a portfolio consisting of three shares:

Share	Portfolio weight	Beta	Expected return in %	Total variance
A	0.20	0.40	14	0.015
B	0.50	0.50	15	0.025
C	0.30	1.10	21	0.100

Standard Deviation of Market Portfolio Returns = 10%

You are given the following additional data:

Covariance (A, B) = 0.030

Covariance (A, C) = 0.020

Covariance (B, C) = 0.040

Calculate the following:

(i) The Portfolio Beta

(ii) Residual variance of each of the three shares

(iii) Portfolio variance using Sharpe Index Model

(iv) Portfolio variance (on the basis of modern portfolio theory given by Markowitz) **(8 Marks)**

(b) Consider a portfolio consisting of a ₹ 200,00,000 investment in share XYZ and a ₹ 2,00,00,000 investment in share ABC. The daily standard deviation of both shares is 1% and that the coefficient of correlation between them is 0.3. You are required to determine the 10-day 99% value at risk for the portfolio? **(4 Marks)**

(c) The pricing of securitized instruments is an important aspect of securitization. Explain this statement. **(2 Marks)**

2. (a) JKL Ltd. is considering a project for which the following estimates are available:

	₹
Initial Cost of the project	20,00,00,000
Sales price/unit	800
Cost/unit	500
Sales volumes	
Year 1	400000 units
Year 2	600000 units
Year 3	600000 units

Discount rate is 12% p.a.

You are required to measure the sensitivity (based on break-even approach) of the project in relation to each of the following parameters:

(i) Sales Price/unit

(ii) Unit cost

(iii) Sales volume and

(iv) Initial outlay

Notes:

(i) Taxation may be ignored.

(ii) PVF Table

Year	**1**	**2**	**3**
PVF @12%	0.893	0.797	0.712

(iii) Assume 360 days in a year. **(6 Marks)**

(b) The risk free rate of return Rf is 9 percent. The expected rate of return on the market portfolio Rm is 13 percent. The expected rate of growth for the dividend of Platinum Ltd. is 7 percent. The last dividend paid on the equity stock of firm A was ₹ 2.00. The beta of Platinum Ltd. equity stock is 1.2.

(i) What is the equilibrium price of the equity stock of Platinum Ltd.?

(ii) How would the equilibrium price change when changes (in absolute terms) in various parameters takes place as follows:

- The inflation premium increases by 2 percent and

- the expected growth rate increases by 3 percent and
- the equity beta of Platinum Ltd. rises to 1.3. **(4 Marks)**

(c) Explain the concept of "Cost of Carry" in Futures pricing. Also explain the term Contango and Backwardation markets. **(4 Marks)**

3. (a) On 1st April 2023 Fair Return Mutual Fund has 8,00,000 units and is having the following assets with (respective prices) at 4.00 p.m.

Shares	No. of Shares	Market Price Per Share (₹)
A Ltd.	20000	19.70
B Ltd.	100000	482.60
C Ltd.	20000	264.40
D Ltd.	200000	675.17
E Ltd.	60000	25.00

Required:

(i) Calculate NAV p.u. of the Fund on 1st April 2023.

(ii) Assuming that on 1st April 2023, Mr. X, a HNI, transfers an amount of ₹ 50,00,100 to the Fund and Fund Manager immediately purchases 15000 shares of E Ltd. and balance is held in bank.

Advice Fund Manger:

(A) number of units will be issued to Mr. X.

(B) The number of shares of E Ltd needs to be purchased if a cash balance of ₹ 4,76,000 is required to be maintained to meet some cash expenses.

(iii) Now suppose on 2 April 2023 at 4.00 p.m. the market price of shares is as follows:

Shares	₹
A Ltd.	20.30
B Ltd.	513.70
C Ltd.	290.80
D Ltd.	671.90
E Ltd.	44.00

Then what will be new NAV p.u.

Note: - Round off calculation upto 2 decimal points. **(6 Marks)**

(b) There is a privately held company X Pvt. Ltd that is operating into the retail space, and is now scouting for angel investors. The details pertinent to valuing X Pvt. Ltd are as follows –

The company has achieved break even this year and has an EBITDA of ₹ 90 crore. The unleveraged beta based on the industry in which it operates is 1.8, and the average debt to equity ratio is hovering at 40:60. The rate of return provided by risk free liquid bonds is 5%. The EV is to be taken at a multiple of 5 on EBITDA. The accountant has informed that the EBITDA of ₹ 90 crore includes an extraordinary gain of ₹ 10 crore for the year, and a potential write off of preliminary sales promotion costs of ₹ 20 crore are still pending. The internal assessment of rate of market return for the industry is 11%. The FCFs for the next 3 years are as follows:

(₹ crore)

	Y1	Y2	Y3
Future Cash flows	100	120	150

The pre-tax cost of debt is 8.40%. Assume a tax regime of 30%.

What is the potential value to be placed on X Pvt. Ltd?

Note: While PV Factors values to be rounded off to 3 decimal points the other calculations to be rounded off to 2 decimal points. **(4 Marks)**

(c) **Either**

Describe briefly the Dow Theory for technical analysis and how it classifies the market movements. **(4 Marks)**

(c) **Or**

Explain briefly the concept of the Efficient Frontier. If an investors portfolio is not efficient, then what action he/she should take as per this concept. **(4 Marks)**

4. (a) A multinational company is planning to set up a subsidiary company in India (where hitherto it was exporting) in view of growing demand for its product and competition from other MNCs. The initial project cost (consisting of Plant and Machinery including installation) is estimated to be US$ 500 million. The net working capital requirements are estimated at US$ 50 million. The company follows straight line method of depreciation. Presently, the company is exporting two million units every year at a unit price of US$ 80, its variable cost per unit being US$ 40.

The Chief Financial Officer has estimated the following operating cost and other data in respect of proposed project:

(i) Variable operating cost will be US $ 20 per unit of production;

(ii) Additional cash fixed cost will be US $ 30 million p.a. and project's share of allocated fixed cost will be US $ 3 million p.a. based on principle of ability to share;

(iii) Production capacity of the proposed project in India will be 5 million units;

(iv) Expected useful life of the proposed plant is five years with no salvage value;

(v) Existing working capital investment for production & sale of two million units through exports was US $ 15 million;

(vi) Export of the product in the coming year will decrease to 1.5 million units in case the company does not open subsidiary company in India, in view of the presence of competing MNCs that are in the process of setting up their subsidiaries in India;

(vii) Applicable Corporate Income Tax rate is 35%, and

(viii) Required rate of return for such project is 12%.

Assuming that there will be no variation in the exchange rate of two currencies and all profits will be repatriated, as there will be no withholding tax, estimate Net Present Value (NPV) of the proposed project in India.

Present Value Interest Factors (PVIF) @ 12% for five years are as below:

Year	1	2	3	4	5
PVIF	0.8929	0.7972	0.7118	0.6355	0.5674

(8 Marks)

(b) Details about portfolio of shares of an investor is as below:

Shares	No. of shares (lakh)	Price per share	Beta
A Ltd.	3.00	₹ 500	1.40
B Ltd.	4.00	₹ 750	1.20
C Ltd.	2.00	₹ 250	1.60

The investor thinks that the risk of portfolio is very high and wants to reduce the portfolio beta to 0.91. He is considering two below mentioned alternative strategies:

(i) Dispose off a part of his existing portfolio to acquire risk free securities, or

(ii) Take appropriate position on Nifty Futures which are currently traded at 8125 and each Nifty points is worth ₹ 200.

You are required to determine:

(1) portfolio beta,

(2) the value of risk free securities to be acquired,

(3) the number of shares of each company to be disposed off,

(4) the number of Nifty contracts to be bought/sold; and

(5) the value of portfolio beta for 2% rise in Nifty. **(6 Marks)**

5. (a) BA Ltd. and DA Ltd. both the companies operate in the same industry. The Financial statements of both the companies for the current financial year are as follows:

Balance Sheet

Particulars	BA Ltd. (₹)	DA Ltd. (₹)
Current Assets	14,00,000	10,00,000
Fixed Assets (Net)	10,00,000	5,00,000
Total (₹)	**24,00,000**	**15,00,000**
Equity capital (₹10 each)	10,00,000	8,00,000
Retained earnings	2,00,000	--
14% long-term debt	5,00,000	3,00,00
Current liabilities	7,00,000	4,00,000
Total (₹)	**24,00,000**	**15,00,000**

Income Statement

	BA Ltd. (₹)	DA Ltd. (₹)
Net Sales	34,50,000	17,00,000
Cost of Goods sold	27,60,000	13,60,000
Gross profit	6,90,000	3,40,000

Operating expenses	2,00,000	1,00,000
Interest	70,000	42,000
Earnings before taxes	4,20,000	1,98,00
Taxes @ 50%	2,10,000	99,000
Earnings after taxes (EAT)	**2,10,000**	**99,000**
Additional Information :		
No. of Equity shares	1,00,000	80,000
Dividend payment ratio (D/P)	40%	60%
Market price per share	₹ 40	₹ 15

Assume that both companies are in the process of negotiating a merger through an exchange of equity shares. You have been asked to assist in establishing equitable exchange terms and are required to:

(i) Decompose the share price of both the companies into EPS and P/E components; and also segregate their EPS figures into Return on Equity (ROE) and book value/intrinsic value per share components.

(ii) Estimate future EPS growth rates for each company.

(iii) Based on expected operating synergies BA Ltd. estimates that the intrinsic value of DA's equity share would be ₹20 per share on its acquisition. You are required to develop a range of justifiable equity share exchange ratios that can be offered by BA Ltd. to the shareholders of DA Ltd. Based on your analysis in part (i) and (ii), would you expect the negotiated terms to be closer to the upper, or the lower exchange ratio limits and why?

(iv) Calculate the post-merger EPS based on an exchange ratio of 0.4: 1 being offered by BA Ltd. and indicate the immediate EPS accretion or dilution, if any, that will occur for each group of shareholders.

(v) Based on a 0.4: 1 exchange ratio and assuming that BA Ltd.'s pre-merger P/E ratio will continue after the merger, estimate the post-merger market price. Also show the resulting accretion or dilution in pre-merger market prices. **(10 Marks)**

(b) TM Fincorp has bought a 6 x 9 ₹ 100 crore Forward Rate Agreement (FRA) at 5.25%. On fixing date reference rate i.e. MIBOR turns out be as follows:

Period	Rate (%)
3 months	5.50
6 months	5.70
9 months	5.85

You are required to determine:

(i) Profit/Loss to TM Fincorp. in terms of basis points.

(ii) The settlement amount.

(Assume 360 days in a year) **(4 Marks)**

6. (a) Closing values of NSE Nifty from 6th to 17th day of the month of January of the year 2020 were as follows:

Days	Date	Day	Sensex
1	6	THU	14522
2	7	FRI	14925
3	8	SAT	No Trading
4	9	SUN	No Trading
5	10	MON	15222
6	11	TUE	16000
7	12	WED	16400
8	13	THU	17000
9	14	FRI	No Trading
10	15	SAT	No Trading
11	16	SUN	No Trading
12	17	MON	18000

Calculate Exponential Moving Average (EMA) of Sensex during the above period. The previous day exponential moving average of Sensex can be assumed as 15,000. The value of exponent for 31 days EMA is 0.062.

Give detailed analysis on the basis of your calculations.

Note: - Round off final calculations upto 3 decimal points. **(6 Marks)**

(b) Sun Ltd. is planning to import equipment from Japan at a cost of 3,400 lakh yen. The company may avail loans at 18 percent per annum with quarterly rests with which it can import the equipment. The company has also an offer from Osaka branch of an India based bank extending credit of 180 days at 2 percent per annum against opening of an irrecoverable letter of credit.

Additional information:

Present exchange rate	₹ 100 = 340 yen
180 day's forward rate	₹ 100 = 345 yen

Commission charges for letter of credit at 2 per cent per 12 months.

Advice the company whether the offer from the foreign branch should be accepted. **(4 Marks)**

(c) Why do traditional lenders like banks hesitate to finance startup? List out what alternative financing options are available to entrepreneurs? **(4 Marks)**

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ANSWER TO PART – I CASE SCENARIO BASED MCQS

1. **Option (a)**
2. **Option (b)**
3. **Option (c)**
4. **Option (c)**
5. **Option (a)**
6. **Option (d)**
7. **Option (c)**
8. **Option (c)**
9. **Option (b)**
10. **Option (a)**
11. **Option (a)**
12. **Option (b)**
13. **Option (b)**
14. **Option (b)**
15. **Option (a)**

ANSWERS OF PART – II : DESCRIPTIVE QUESTIONS

1. (a) (i) Portfolio Beta

0.20 x 0.40 + 0.50 x 0.50 + 0.30 x 1.10 = 0.66

(ii) Residual Variance

To determine Residual Variance first of all we shall compute the Systematic Risk as follows:

$\beta_A^2 \times \sigma_M^2 = (0.40)^2(0.01) = 0.0016$

$\beta_B^2 \times \sigma_M^2 = (0.50)^2(0.01) = 0.0025$

$\beta_C^2 \times \sigma_M^2 = (1.10)^2(0.01) = 0.0121$

Residual Variance

A 0.015 – 0.0016 = 0.0134

B 0.025 – 0.0025 = 0.0225

C 0.100 – 0.0121 = 0.0879

(iii) Portfolio variance using Sharpe Index Model

Systematic Variance of Portfolio = $(0.10)^2 \times (0.66)^2 = 0.004356$

Unsystematic Variance of Portfolio = $0.0134 \times (0.20)^2 + 0.0225 \times (0.50)^2 + 0.0879 \times (0.30)^2 = 0.014072$

Total Variance = 0.004356 + 0.014072 = 0.018428

(iv) Portfolio variance on the basis of Markowitz Theory

$= (w_A \times w_A \times \sigma_A^2) + (w_A \times w_B \times Cov_{AB}) + (w_A \times w_C \times Cov_{AC}) + (w_B \times w_A \times Cov_{AB}) + (w_B \times w_B \times \sigma_B^2) + (w_B \times w_C \times Cov_{BC}) + (w_C \times w_A \times Cov_{CA}) + (w_C \times w_B \times Cov_{CB}) + (w_C \times w_C \times \sigma_C^2)$

= (0.20 x 0.20 x 0.015) + (0.20 x 0.50 x 0.030) + (0.20 x 0.30 x 0.020) + (0.20 x 0.50 x 0.030) + (0.50 x 0.50 x 0.025) + (0.50 x 0.30 x 0.040) + (0.30 x 0.20 x 0.020) + (0.30 x 0.50 x 0.040) + (0.30 x 0.30 x 0.10)

= 0.0006 + 0.0030 + 0.0012 + 0.0030 + 0.00625 + 0.0060 + 0.0012 + 0.0060 + 0.0090

= 0.0363

(b) The standard deviation of the daily change in the investment in each asset is ₹ 2,00,000 i.e. 2 lakhs. The variance of the portfolio's daily change is

$$V = 2^2 + 2^2 + 2 \times 0.3 \times 2 \times 2 = 10.4$$

$$\sigma \text{ (Standard Deviation)} = \sqrt{10.4} = ₹ 3.22 \text{ lakhs}$$

Alternatively, it can also be computed as follows:

$= (1)^2(0.50)^2 + (1)^2(0.50)^2 + 2(1)(1)(0.3)(0.50)(0.50)$

$= 0.25 + 0.25 + 0.15 = 0.65\%$

σ (Standard Deviation) = $\sqrt{0.65} = 0.80623\%$

σ (Standard Deviation) in Amount = ₹ 400 lakhs x 0.80623% = ₹ 3.22 lakhs

Accordingly, the standard deviation of the 10-day change is

₹ 3.22 lakhs x $\sqrt{10}$ = ₹ 10.18 lakh

From the Normal Table we see that z score for 1% is 2.33. This means that 1% of a normal distribution lies more than 2.33 standard deviations below the mean. The 10-day 99 percent value at risk is therefore

2.33 × ₹10.18 lakh = ₹ 23.72 lakh

(c) Pricing of securitized instruments is an important aspect of securitization. While pricing the instruments, it is important that it should be acceptable to both originators as well as to the investors. On the same basis pricing of securities can be divided into following two categories:

(i) From Originator's Angle

From originator's point of view, the instruments can be priced at a rate at which originator has to incur an outflow and if that outflow can be amortized over a period of time by investing the amount raised through securitization.

(ii) From Investor's Angle

From an investor's angle security price can be determined by discounting best estimate of expected future cash flows using rate of yield to maturity of a security of comparable security with respect to credit quality and average life of the securities.

2. (a) Calculation of NPV

NPV = - 20,00,00,000 + 4,00,000 x 300 x PVF (12%, 1) + 6,00,000 x 300 x PVF (12%, 2) + 6,00,000 x 300 x PVF (12%, 3)

= - 20,00,00,000 + 10,71,60,000 + 14,34,60,000 + 12,81,60,000

= 37,87,80,000 – 20,00,00,000

= ₹ 17,87,80,000

Measurement of sensitivity is as follows:

(i) Sales Price

Let the sale price/Unit be S so that the project would break even with 0 NPV.

$\therefore$ 20,00,00,000 = 4,00,000 x (S – 500) x PVF (12%, 1) + 6,00,000 x (S – 500) x PVF (12%, 2) + 6,00,000 x (S – 500) x PVF (12%, 3)

S – 500 = 20,00,00,000/12,62,600

S – 500 = ₹ 158.40

S = ₹ 658.40 which represents a fall of (800-658.40)/800

Or 0.177 or 17.70%

(ii) Unit Cost

Let the Cost/Unit be C so that the project would break even with 0 NPV with sales price = ₹ 800.

$\therefore$ 20,00,00,000 = 4,00,000 x (800 – C) x PVF (12%, 1) + 6,00,000 x (800 – C) x PVF (12%, 2) + 6,00,000 x (800 – C) x PVF (12%, 3)

800 – C = 20,00,00,000/12,62,600

800 – C = ₹ 158.40

C = ₹ 641.60 which represents an increase of (641.60 - 500)/500 Or 0.2832or 28.32%

Or

If sale price = ₹ 800.00 the cost price required to give a margin of ₹ 158.40 i.e., (₹ 800 – ₹ 158.40) or ₹ 641.60 which would represent a rise of 28.32% i.e., $\frac{641.60-500}{500}$ x 100

(iii) Sales volume

The requisite percentage fall is: -

17,87,80,000/37,87,80,000 $\times$ 100 = 47.20%

(iv) Since PV of inflows remains at ₹ 37,87,80,000 the initial outlay must also be the same.

$\therefore$ Percentage rise = 17,87,80,000/20,00,00,000 $\times$ 100 = 89.39%.

(b) **(i)** Equilibrium price of Equity using CAPM

= 9% + 1.20(13% - 9%)

= 9% + 4.80%= 13.80%

$$P=\frac{D_1}{k_e-g}=\frac{2.00(1.07)}{0.138-0.07}=\frac{2.14}{0.068}=₹\,31.47$$

(ii) New Equilibrium price of Equity using CAPM

= 11% + 1.3(15% - 11%)

= 11% + 5.2%= 16.20%

$$P=\frac{D_1}{k_e-g}=\frac{2.00(1.10)}{0.162-0.10}=₹\,35.48$$

(c) The cost-of-carry model for Futures Contract Pricing, is as under: -

Future price = Spot price + Carrying cost – Returns (dividends, etc.)

This is also called as Theoretical minimum price or arbitrage free price.

The difference between the prevailing spot price of an asset and the futures price is known as the Basis, i.e.,

Basis = Spot price – Futures price

In a normal market, the spot price is less than the futures price (which includes the full cost-of-carry) and accordingly the basis would be negative. Such a market, in which the basis is decided solely by the cost-of-carry is known as a contango market.

Basis can become positive, i.e., the spot price can exceed the futures price only if there are factors other than the cost of carry to influence the futures price. In case this happens, then basis becomes positive and the market under such circumstances is termed as a backwardation market or inverted market.

3. (a) (i) NAV of the Fund.

$$= \frac{3,94,000 + 4,82,60,000 + 52,88,000 + 13,50,34,000 + 15,00,000}{8,00,000}$$

$$= \frac{19,04,76,000}{8,00,000} = ₹\ 238.095 \text{ rounded to } ₹\ 238.10$$

(ii) (A) No. of units to be issued to Mr. X = $\frac{50,00,100}{238.10} = 21000$

(B) No. of shares of E Ltd. to be purchased:

Fund received from Mr. X	₹ 50,00,100
Less: - Position of cash to be maintained	(₹ 4,76,000)
Amount of cash available for acquisition of shares of E. Ltd.	₹ 45,24,100
Price per share of E Ltd.	₹ 25.00
Number of shares to be acquired (45,24,100/25)	1,80,964

(iii) On 2nd April 2023, the NAV of fund will be as follows:

Shares	No. of shares	Price	Amount (₹)
A Ltd.	20000	20.30	4,06,000
B Ltd.	100000	513.70	5,13,70,000
C Ltd.	20000	290.80	58,16,000
D Ltd.	200000	671.90	13,43,80,000
E Ltd.	240964	44.00	1,06,02,416
Cash			4,76,000
			20,30,50,416

NAV as on 2nd April 2023 = $\frac{20,30,50,416}{8,21,000}$ = ₹ 247.32 per unit

(b) The levered beta of the company will be 1.8[1+(1-0.3)*40/60)] = 2.64

The adjusted EBITDA would be ₹ 90 crore – ₹ 10 crore – ₹ 20 crore = ₹ 60 crore

The EV will be multiple of 5 on the 60 obtained above = ₹ 300 crore

The Cost of equity in accordance with CAPM = Rf + β (Rm – Rf)

= 5% + 2.64 (11% - 5%) = 20.84%

The WACC = Cost of Equity + Cost of Debt

= 20.84 (60/100) + 8.40 (40/100) = 15.864

Finally, the future cash flows can be discounted at the WACC obtained above as under –

	Y1	Y2	Y3
Future Cash flows (₹ crore)	100	120	150
Discount factor (₹ crore)	0.863	0.745	0.643
PVs of cash flows (₹ crore)	86.30	89.40	96.45
Value of Firm (₹ crore)			**272.15**

(c) **Either**

The Dow Theory's purpose is to determine where the market is and where is it going, although not how far or high. The theory, in practice, states that if the cyclical swings of the stock market averages are successively higher and the successive lows are higher, then the market trend is up and a bullish market exists. Contrarily, if the successive highs and successive lows are lower, then the direction of the market is down and a bearish market exists.

The Dow Theory is based upon the movements of two indices, constructed by Charles Dow, Dow Jones Industrial Average (DJIA) and Dow Jones Transportation Average (DJTA).

The movements of the market are divided into three classifications, all going at the same time:-

(i) the primary movement,

(ii) the secondary movement, and

(iii) the daily fluctuations.

The primary movement is the main trend of the market, which lasts from one year to 36 months or longer. This trend is commonly called bear or bull market.

The secondary movement of the market is shorter in duration than the primary movement and is opposite in direction. It lasts from two weeks to a month or more.

The daily fluctuations are the narrow movements from day-to-day.

OR

Markowitz has formalized the risk return relationship and developed the concept of efficient frontier using the Mean-Variance Dominance Principle. For selection

of a portfolio, comparison between combinations of portfolios is essential. As a rule, a portfolio is dominating another portfolio in terms of mean and variance if there is another portfolio with:

(a) A lower expected value of return and same or higher standard deviation (risk).

(b) The same or higher standard deviation (risk) but a lower expected return.

Markowitz has defined the diversification as the process of combining assets that are less than perfectly positively correlated in order to reduce portfolio risk without sacrificing any portfolio returns. If an investors' portfolio is not efficient he may:

(i) Increase the expected value of return without increasing the risk.

(ii) Decrease the risk without decreasing the expected value of return, or

(iii) Obtain some combination of increase of expected return and decrease risk.

4. (a) Financial Analysis whether to set up the manufacturing units in India or not may be carried using NPV technique as follows:

I. Incremental Cash Outflows

	$ Million
Cost of Plant and Machinery	500.00
Working Capital	50.00
Release of existing Working Capital	(15.00)
	535.00

II. Incremental Cash Inflow after Tax (CFAT)

(a) Generated by investment in India for 5 years

	$ Million
Sales Revenue (5 Million x $80)	400.00
Less: Costs	
Variable Cost (5 Million x $20)	100.00
Fixed Cost	30.00
Depreciation ($500Million/5)	100.00
EBIT	170.00

Taxes @35%	59.50
EAT	110.50
Add: Depreciation	100.00
CFAT (1-5 years)	210.50

(b) Cash flow at the end of the 5 years (Release of Working Capital) 35.00

(c) Cash generation by exports (Opportunity Cost)

	$ Million
Sales Revenue (1.5 Million x $80)	120.00
Less: Variable Cost (1.5 Million x $40)	60.00
Contribution before tax	60.00
Tax@35%	21.00
CFAT (1-5 years)	39.00

(d) Additional CFAT attributable to Foreign Investment

	$ Million
Through setting up subsidiary in India	210.50
Through Exports in India	39.00
CFAT (1-5 years)	171.50

III. Determination of NPV

Year	CFAT ($ Million)	PVF@12%	PV ($ Million)
1-5	171.50	3.6048	618.2232
5	35	0.5674	19.8590
			638.0822
Less: Initial Outflow			535.0000
			103.0822

Since NPV is positive the proposal should be accepted.

(b)

Shares	**No. of shares (lakhs) (1)**	**Market Price of Per Share (2)**	**× (2) (₹ lakhs)**	**% to total (w)**	**ß (x)**	**wx**
A Ltd.	3.00	500.00	1500.00	0.30	1.40	0.42
B Ltd.	4.00	750.00	3000.00	0.60	1.20	0.72

C Ltd.	2.00	250.00	500.00 5000.00	0.10 1.00	1.60	0.16 1.30

(1) Portfolio beta 1.30

(2) Required Beta 0.91

Let the proportion of risk free securities for target beta 0.91 = p

0.91 = 0 × p + 1.30 (1 – p)

p = 0.30 i.e. 30%

Shares to be disposed off to reduce beta (5000 × 30%) ₹ 1,500 lakh and Risk Free securities to be acquired.

(3) Number of shares of each company to be disposed off

Shares	% to total (w)	Proportionate Amount (₹ lakhs)	Market Price Per Share	No. of Shares (Lakh)
A Ltd.	0.30	450.00	500.00	0.90
B Ltd.	0.60	900.00	750.00	1.20
C Ltd.	0.10	150.00	250.00	0.60

(4) Number of Nifty Contract to be sold

$$\frac{(1.30-0.91) \times 5000 \text{ lakh}}{8{,}125 \times 200} = 120 \text{ contracts}$$

(5) 2% rises in Nifty is accompanied by 2% x 1.30 i.e. 2.6% rise for portfolio of shares

	₹ Lakh
Current Value of Portfolio of Shares	5000
Value of Portfolio after rise	5130
Mark-to-Market Margin paid (8125 × 0.020 × ₹ 200 × 120)	39
Value of the portfolio after rise of Nifty	5091
% change in value of portfolio (5091 – 5000)/ 5000	1.82%
% rise in the value of Nifty	2%
Beta	0.91

5. (a) Market price per share (MPS) = EPS X P/E ratio or P/E ratio = MPS/EPS

(i) Determination of EPS, P/E ratio, ROE and BVPS of BA Ltd. and DA Ltd.

		BA Ltd.	DA Ltd.
Earnings After Tax	(EAT)	₹ 2,10,000	₹ 99,000
No. of Shares	(N)	100000	80000
EPS	(EAT/N)	₹ 2.10	₹ 1.2375
Market price per share	(MPS)	40	15
P/E Ratio	(MPS/EPS)	19.05	12.12
Equity Funds	(EF)	₹ 12,00,000	₹ 8,00,000
BVPS	(EF/N)	12	10
ROE	(EAT/EF) × 100	17.50%	12.37%

(ii) Estimation of growth rates in EPS for BA Ltd. and DA Ltd.

Retention Ratio	(1-D/P ratio)	0.6	0.4
Growth Rate	(ROE × Retention Ratio)	10.50%	4.95%

(iii) Justifiable equity shares exchange ratio

(a) Intrinsic value based = ₹ 20 / ₹ 40 = 0.5:1 (upper limit)

(b) Market price based = MPS_{DA}/MPS_{BA} = ₹ 15 / ₹ 40 = 0.375:1(lower limit)

Since, BA Ltd. has a higher EPS, ROE, P/E ratio and even higher EPS growth expectations, the negotiable terms would be expected to be closer to the lower limit, based on the existing share prices.

(iv) Calculation of Post merger EPS and its effects

Particulars			BA Ltd.	DA Ltd.	Combined
EAT	(₹)	(i)	2,10,000	99,000	3,09,000
Share outstanding		(ii)	100000	80000	132000*
EPS	(₹)	(i) / (ii)	2.1	1.2375	2.341
EPS Accretion (Dilution)	(Re.)		0.241	(0.301***)	

(v) Estimation of Post merger Market price and other effects

Particulars			BA Ltd.	DA Ltd.	Combined
EPS	(₹)	(i)	2.1	1.2375	2.341
P/E Ratio		(ii)	19.05	12.12	19.05
MPS	(₹)	(i) / (ii)	40	15	44.6
MPS Accretion	(₹)		4.6	2.84***	

* Shares outstanding (combined) = 100000 shares + (0.40 × 80000) = 132000 shares

** EPS claim per old share	= ₹ 2.34 × 0.4	₹ 0.936
EPS dilution	= ₹ 1.2375 – ₹ 0.936	₹ 0.3015
***S claim per old share	(₹ 44.60 × 0.4)	₹ 17.84
Less: MPS per old share		₹ 15.00
		₹ 2.84

(b) **(i)** TM will make a profit of 25 basis points since a 6X9 FRA is a contract on 3-month interest rate in 6 months, which turns out to be 5.50% (higher than FRA price).

(ii) The settlement amount shall be calculated by using the following formula:

$$\frac{N(RR-FR)(dtm/360)}{1+RR(dtm/360)}$$

Where

N = Notional Principal Amount

RR = Reference Rate

FR = Agreed upon Forward Rate

Dtm = FRA period specified in days.

Accordingly:

$$\frac{100\,crore(5.50\%-5.25\%)(90/360)}{1+0.055(90/360)} = ₹\ 6,16,523$$

Hence there is profit of ₹ 6,16,523 to TM Fincorp.

6. (a)

Date	1 Sensex	2 EMA for Previous day	3 1-2	4 3×0.062	5 EMA 2 ± 4
6	14522	15000	(478)	(29.636)	14970.364
7	14925	14970.364	(45.364)	(2.812)	14967.55
10	15222	14967.55	254.45	15.776	14983.32
11	16000	14983.32	1016.68	63.034	15046.354
12	16400	15046.354	1353.646	83.926	15130.28
13	17000	15130.28	1869.72	115.922	15246.202
17	18000	15246.202	2753.798	170.735	15416.937

Conclusion – The market is bullish. The market is likely to remain bullish for short term to medium term if other factors remain the same. On the basis of this indicator (EMA) the investors/brokers can take long position.

(b) Option I (To finance the purchases by availing loan at 18% per annum):

Cost of equipment	*₹ in lakhs*
3400 lakh yen at ₹100 = 340 yen	1,000.00
Add: Interest at 4.5% I Quarter	45.00
Add: Interest at 4.5% II Quarter (on ₹1045 lakhs)	47.03
Total outflow in Rupees	1,092.03
Alternatively, interest may also be calculated on compounded basis, i.e.,	
₹ 1000 × [1.045]²	₹1092.03

Option II (To accept the offer from foreign branch):

Cost of letter of credit	
At 1 % on 3400 lakhs yen at ₹100 = 340 yen	₹ 10.00 lakhs
Add: Interest for 2 Quarters	₹ 0.90 lakhs
(A)	₹ 10.90 lakhs
Payment at the end of 180 days:	
Cost	3400.00 lakhs yen

Interest at 2% p.a. [3400 × 2/100 × 180/365]	33.53 lakhs yen
	3433.53 lakhs yen
Conversion at ₹100 = 345 yen [3433.53 / 345 ×100] (B)	₹ 995.23 lakhs
Total Cost: (A) + (B)	₹ 1006.13 lakhs

Advise: Option 2 is cheaper by (1092.03 – 1006.13) lakh or ₹ 85.90 lakh. Hence, the offer may be accepted.

(c) Traditional lenders like banks etc. are not interested in a startup business. The reason is that when you are just starting out, you're not at the point yet where a conservative lender or investor can rely on security of your assets or be able to forecast cashflows to secure their investments or estimate your repayment capacity with certainty. So that leaves one with the option of selling some assets, borrowing against one's home, asking loved ones i.e. family and friends for loans etc. But that involves a lot of risk, including the risk of bankruptcy and strained relationships with friends and family.

Here are some of the sources for funding a startup:

(i) Personal financing

(ii) Personal credit lines

(iii) Family and friends

(iv) Peer-to-peer lending

(v) Crowdfunding