

Mock Test Paper - Series I July, 2025

Date of Paper: 22nd July, 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

XYZ Ltd., a medium-sized company in the renewable energy sector, is experiencing steady sales growth. The company's management, however, is concerned about balancing rapid growth with long-term sustainability. In the past year, XYZ's growth objectives have led to aggressive expansion plans, but management now realizes that such growth might not be financially sustainable in the long run. This raises concerns about how to maintain the company's financial health while meeting its ambitious growth targets.

The CFO of XYZ Ltd. highlights the importance of Sustainable Growth Rate (SGR).

The company now needs to ensure that its operational and financial policies align with its growth goals. XYZ must avoid expanding too quickly, which could strain its financial resources and lead to excessive borrowing. Moreover, management must also consider the long-term implications of resource consumption, particularly in the renewable energy industry, where sustainability is key to both current and future stakeholders.

XYZ Ltd. also realizes that it needs to focus on building its growth capability alongside its growth strategy. Without the necessary infrastructure and financial planning in place, the company's efforts to achieve long-term, sustainable growth could be in jeopardy. Furthermore, the company is aware of the risks of relying too much on external financing and recognizes the need for a balance between maintaining sufficient equity and minimizing debt.

Given the importance of these considerations, XYZ's management team must now review their growth strategy and financial policies to ensure they are consistent with the firm's sustainable growth objectives.

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

1. The concept of Sustainable Growth Rate introduced by.....
 - (a) Harry Markowitz
 - (b) William Sharpe
 - (c) Black Scholes
 - (d) Robert C. Higgins
2. The Sustainable Growth Rate (SGR) represents.....
 - (a) the rate at which the company can grow by issuing more equity.
 - (b) the maximum rate of growth in sales that can be achieved without borrowing additional funds.
 - (c) the growth rate determined by market demand for XYZ's products.
 - (d) the rate of growth determined by inflationary pressures.
3. According to the case scenario the risk associated with growing too quickly is that.....
 - (a) the company might not be able to retain competent staff.
 - (b) the company could face liquidity issues due to over-expansion.
 - (c) the company's stock price might decline.
 - (d) it could reduce the company's market share.
4. Which of the following twin cornerstones are necessary for XYZ Ltd. to achieve sustainable growth?
 - (a) Market conditions and competition.
 - (b) Growth capability and growth strategy.
 - (c) Product innovation and marketing strategy.
 - (d) Cost-cutting measures and increased sales.
5. In an inflationary condition if creditors require that XYZ Ltd.'s historical cost debt-to-equity ratio stay constant, the inflation.....
 - (a) reduces the need for external financing.

- (b) increases the sustainable growth rate by lowering costs.
- (c) lowers the sustainable growth rate.
- (d) It has no effect on the company's growth rate. (5 x 2 = 10 Marks)

Case Scenario II

You are an investment analyst working for a financial advisory firm. You have been asked to analyze the bond market's yield curve to assist your clients in making investment decisions. The yield curve represents the relationship between the interest rates (yield) and the time to maturity for debt securities, usually government bonds.

For simplicity, assume the following yield data for government bonds over various maturities (measured in years):

Yield Curve Table

Maturity (Years)	Yield (%)
1 Year	3.00%
2 Years	4.00%
3 Years	5.00%
5 Years	6.00%
7 Years	6.40%
10 Years	7.00%
15 Years	7.40%
30 Years	7.60%

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

6. The main characteristic of a normal yield curve is.....
 - (a) Short-term yields are higher than long-term yields.
 - (b) Short-term yields are lower than long-term yields.
 - (c) Yields remain the same across all maturities.
 - (d) Yields fluctuate randomly over different maturities.
7. Based on the given yield data, what is the yield spread between the 10-year bond and the 1-year bond?
 - (a) 2.0%
 - (b) 3.5%

- (c) 4.0%
 - (d) 5.0%
8. An inverted yield curve typically indicates.....
- (a) Economic growth
 - (b) Economic uncertainty
 - (c) An upcoming recession
 - (d) Inflationary pressure
9. If an investor is looking to invest for 2 years starting at the end of 3 years from now, the forward rate he would expect shall be approximately.....
- (a) 7.41%
 - (b) 7.52%
 - (c) 7.76%
 - (d) 7.93%
10. If an investor is looking to invest for 2 years starting 5 years from now, the forward rate he would expect shall be approximately.....
- (a) 7.41%
 - (b) 7.52%
 - (c) 7.76%
 - (d) 7.93%
- (5 x 2 = 10 Marks)**

Case Scenario III

XYZ Ltd., a U.S. firm, will require £ 300,000 in 180 days and is evaluating different strategies to hedge against currency risk. The available market data is as follows:

Current Spot Rate: 1 £ = \$ 2.00

180-Day Forward Rate: 1 £ = \$ 1.96

Interest Rates:

- **UK (180 days):**
 - Deposit Rate: 4.50%
 - Borrowing Rate: 5.00%

- **US (180 days):**
 - Deposit Rate: 5.00%
 - Borrowing Rate: 5.50%

Option Contract:

- Call option available on £, expiring in 180 days with:
 - Exercise Price: \$ 1.97
 - Premium: \$ 0.04

XYZ Ltd. has forecasted the following probabilities for spot rates after 180 days:

Spot Rate	Probability
\$ 1.91	25%
\$ 1.95	60%
\$ 2.05	15%

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

11. The expected dollar amount neededif XYZ Ltd. does not hedge.
 - (a) \$ 5,88,000
 - (b) \$ 6,05,741
 - (c) \$ 5,95,560
 - (d) \$ 5,86,500
12. If XYZ Ltd. chooses the forward contract option, the expected dollar amount needed in 180 days, the total dollar amount required shall be.....
 - (a) \$ 5,88,000
 - (b) \$ 6,05,741
 - (c) \$ 5,95,560
 - (d) \$ 5,86,500
13. Under the money market hedge, approximately how much amount in dollars will XYZ Ltd. need to repay after 180 days?
 - (a) \$ 5,88,000
 - (b) \$ 6,05,741

- (c) \$ 5,95,560
(d) \$ 5,86,500
14. If XYZ Ltd. chooses the call option contract, after 180 days the total cost in dollar for £ 300,000 (inclusive of interest on Premium amount) shall be.....
- (a) \$ 5,88,000
(b) \$ 6,05,741
(c) \$ 5,95,560
(d) \$ 5,86,500
15. The expected spot rate per £ after 180 days shall be approximately.....
- (a) \$ 1.91
(b) \$ 1.94
(c) \$ 1.96
(d) \$ 2.05
- (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) Mr. NK has categorized all the available stock in the market into the following types:
- (i) Small cap growth stocks
 - (ii) Small cap value stocks
 - (iii) Large cap growth stocks
 - (iv) Large cap value stocks

Mr. NK also estimated the weights of the above categories of stocks in the market index. Further, the sensitivity of returns on these categories of stocks to the three important factors are estimated to be:

Category of Stocks	Weight in the Market Index	Factor I (Beta)	Factor II (Book Price)	Factor III (Inflation)
Small cap growth	25%	0.80	1.39	1.35
Small cap value	10%	0.90	0.75	1.25
Large cap growth	50%	1.165	2.75	8.65
Large cap value	15%	0.85	2.05	6.75
Risk Premium		6.85%	-3.5%	0.65%

The rate of return on Treasury Bonds is 4.50%.

Required:

- (i) Using Arbitrage Pricing Theory, determine the expected return on the market index.
 - (ii) Using Capital Asset Pricing Model (CAPM), determine the expected return on the market index.
 - (iii) Mr. NK wants to construct a portfolio constituting only the 'Small cap value' and 'Large cap growth' stocks. If the target beta for the desired portfolio is 1, suggest the composition of his portfolio. **(6 Marks)**
- (b) On 1st April 2019 FR Mutual Fund has the following assets and prices at 4.00 p.m.

Shares	No. of Shares	Market Price Per Share (₹)
A Ltd.	10000	19.70
B Ltd.	50000	482.60
C Ltd.	10000	264.40
D Ltd.	100000	674.90
E Ltd.	30000	25.90
No. of units of funds		8,00,000

Required:

- (i) Calculate NAV of the Fund on 1st April 2019.
- (ii) Assess the position of Fund, assuming that on 1st April 2019, Mr. X, an HNI, send a cheque of ₹ 50,00,000 to the Fund and Fund Manager immediately purchases 18000 shares of C Ltd. and balance is held in bank. **(4 Marks)**

- (c) Define the term Value-at-Risk (VAR) and explain its main features. **(4 Marks)**
2. (a) KLM Ltd., is considering taking up one of the two projects-Project-K and Project-S. Both the projects having same life require equal investment of ₹ 80 lakhs each. Both are estimated to have almost the same yield. As the company is new to this type of business, the cash flow arising from the projects cannot be estimated with certainty. An attempt was therefore, made to use probability to analyse the pattern of cash flow from other projects during the first year of operations. This pattern is likely to continue during the life of these projects. The results of the analysis are as follows:

Project K		Project S	
Cash Flow (in ₹)	Probability	Cash Flow (in ₹)	Probability
11	0.10	09	0.10
13	0.20	13	0.25
15	0.40	17	0.30
17	0.20	21	0.25
19	0.10	25	0.10

Evaluate which of the two projects is riskier? **(6 Marks)**

- (b) R Ltd. has surplus cash of ₹ 100 lakhs and wants to distribute 27% of it to the shareholders. The company decides to buy back shares. The Finance Manager of the company estimates that its share price after re-purchase is likely to be 10% above the buyback price if the buyback route is taken. The number of shares outstanding at present is 10 lakhs and the current EPS is ₹ 3.
- You are required to suggest:
- The price at which the shares can be re-purchased, if the market capitalization of the company should be ₹ 210 lakhs after buyback,
 - The number of shares that can be re-purchased, and
 - The impact of share re-purchase on the EPS, assuming that after buyback net income shall remain the same. **(4 Marks)**
- (c) Briefly explain the techniques used for analyzing the Industry wide factors. **(4 Marks)**
3. (a) Zaz plc, a UK Company is in the process of negotiating an order amounting € 2.8 million with a large German retailer on 6 month's credit. If successful, this will be first time for Zaz has exported goods into the highly competitive German

Market. The Zaz is considering following 3 alternatives for managing the transaction risk before the order is finalized.

- (I) Mr. Peter the Marketing head has suggested that in order to remove transaction risk completely Zaz should invoice the German firm in Sterling using the current €/£ average spot rate to calculate the invoice amount.
- (II) Mr. Wilson, CE is doubtful about Mr. Peter's proposal and suggested an alternative of invoicing the German firm in € and using a forward exchange contract to hedge the transaction risk.
- (III) Ms. Karen, CFO is agreed with the proposal of Mr. Wilson to invoice the German first in €, but she is of opinion that Zaz should use sufficient 6-month Sterling Future contracts (to the nearest whole number) to hedge the transaction risk.

Following data is available:

Spot Rate	€ 1.1960 - €1.1970/£
6-months forward points	0.60 – 0.55 Euro Cents.
6-month Future contract is currently trading at	€ 1.1943/£
6-month Future contract size is	£ 62,500
After 6-month Spot rate and future rate	€ 1.1873/£

You are required to:

- (i) Suggest which alternative you consider to be most appropriate.
- (ii) Explain the reason why Mr. Wilson is doubtful about Mr. Peter's proposal.

(6 Marks)

- (b) From the following particulars, calculate the effective rate of interest p.a. as well as the total cost of funds to Bhaskar Ltd., which is planning a CP issue:

Issue Price of CP	₹ 97,550
Face Value	₹ 1,00,000
Maturity Period	3 Months
Issue Expenses:	
Brokerage	0.15% for 3 months
Rating Charges	0.50% p.a.
Stamp Duty	0.175% for 3 months (4 Marks)

Either

- (c) Briefly explain the steps in securitization mechanism **(4 Marks)**

Or

- (c) Explain Factors Affecting Value of an Option. **(4 Marks)**

4. (a) Two companies ABC Ltd. and XYZ Ltd. approach the DEF Bank for FRA (Forward Rate Agreement). Both companies want to borrow a sum of ₹ 100 crores after 2 years for a period of 1 year. Bank has calculated Yield Curve of both companies as follows:

Year	XYZ Ltd.	ABC Ltd.
1	3.86%	4.12%
2	4.20%	5.48%
3	4.48%	5.78%

Required:

- (i) Identify at least one reason for difference in the Yield Curve for the companies.
- (ii) Calculate the rate of interest DEF Bank would quote under 2V3 FRA, using the company's yield information as quoted above.
- (iii) Suppose DEF Bank offers Interest Rate Guarantee for a premium of 0.10% of the amount of loan, calculate the cost of interest for XYZ Ltd. if interest rate for one year in 2 years turns out to be

(1) 4.50%

(2) 5.50%

(4 Marks)

- (b) Equity of KGF Ltd. (KGFL) is ₹ 410 Crores, its Debt, is worth ₹ 170 Crores. Printer Division segments value is attributable to 74%, which has an Asset Beta (β_p) of 1.45, balance value is applied on Spares and Consumables Division, which has an Asset Beta (β_{sc}) of 1.20 KGFL Debt beta (β_D) is 0.24.

Required:

- (i) Calculate Equity Beta (β_E) of KGFL,
- (ii) Assess Equity Beta (β_E), if KGF Ltd. decides to change its Debt Equity position by raising further debt and buying back of equity to have its Debt Equity Ratio at 1.90 [Debt/ (Debt + Equity)]. Assume that the present

Debt Beta (β_{D1}) is 0.35 and any further funds raised by way of Debt will have a Beta (β_{D2}) of 0.40.

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

(c) Explain the structure of Venture Capital Funds exist in India. **(4 Marks)**

5. (a) (i) On 1 April 2015, Sunidhi was holding a portfolio of 10 securities whose value was ₹ 9,94,450, the weighted average of beta of 9 securities of the portfolio was 1.10.

Since she was expecting a fall in the prices of the shares in near future to hedge her portfolio, she sold 5 contract of NIFTY Futures (Multiplier of 25) expiring in May 2015, which was trading at 8767.07 on 1 April.

Required:

- (1) Calculate the beta of the 10th security.
- (2) Reconcile the reasons in spite of 2% fall in the market as per Sunidhi's apprehension if she would have earned some profit on her cash position.

- (ii) A Futures contract is available on R Ltd. that pays an annual dividend of ₹ 4 and whose stock is currently priced at ₹ 125. Each Futures contract calls for delivery of 1,000 shares to stock in one year, daily marking to market. The treasury bill rate is 8%.

Required:

- (1) Given the above information, assess the price of one Futures contract.
- (2) If the company stock price decreases by 6%, then what will be the price of one Futures contract?
- (3) Suppose the company stock price decreases, then evaluate realizes gain or loss for an investor that has a long position in one Futures contract of R Ltd.

(Ignore margin and taxation, if any) **(8 Marks)**

- (b) Electraspace is consumer electronics wholesaler. The business of the firm is highly seasonal in nature. In 6 months of a year, firm has a huge cash deposits and especially near Christmas time and other 6 months firm cash crunch, leading to borrowing of money to cover up its exposures for running the business.

It is expected that firm shall borrow a sum of €50 million for the entire period of slack season in about 3 months.

A Bank has given the following quotations:

Spot 5.50% - 5.75%

3 × 6 FRA 5.59% - 5.82%

3 × 9 FRA 5.64% - 5.94%

3-month €50,000 future contract maturing in a period of 3 months is quoted at 94.15 (5.85%).

You are required to examine:

(i) How a FRA, shall be useful if the actual interest rate after 3 months turnout to be:

(1) 4.5% (2) 6.5%

(ii) How 3 months Future contract shall be useful for company if interest rate turns out as mentioned in part (a) above. **(6 Marks)**

6. (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) C Ltd. and P Ltd. both companies operating in the same industry decided to merge and form a new entity S Ltd. The relevant financial details of the two companies prior to merger announcement are as follows:

	C Ltd.	P Ltd.
Annual Earnings after Tax (₹ lakh)	10000	5800
No. Shares Outstanding (lakh)	4000	1000
PE Ratio (No. of Times)	8	10

The merger will be affected by means of stock swap (exchange) of 3 shares of C Ltd. for 1 share of P Ltd.

After the merger it is expected that due to synergy effects, Annual Earnings (Post Tax) are expected to be 8% higher than sum of the earnings of the two companies individually. Further, it is expected that P/E Ratio of S Ltd. shall be average of P/E Ratios of two companies before the merger.

You are required to determine the extent to which shareholders of P Ltd. will be benefitted per share from the proposed merger.

(6 Marks)

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PAPER – 2: ADVANCED FINANCIAL MANAGEMENT

ANSWER TO PART – I CASE SCENARIO BASED MCQS

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

ANSWERS OF PART – II DESCRIPTIVE QUESTIONS

1. (a) (i) **Method I**

Stock's return

Small cap growth = $4.5 + 0.80 \times 6.85 + 1.39 \times (-3.5) + 1.35 \times 0.65 = 5.9925\%$

Small cap value = $4.5 + 0.90 \times 6.85 + 0.75 \times (-3.5) + 1.25 \times 0.65 = 8.8525\%$

Large cap growth = $4.5 + 1.165 \times 6.85 + 2.75 \times (-3.5) + 8.65 \times 0.65 = 8.478\%$

$$\text{Large cap value} = 4.5 + 0.85 \times 6.85 + 2.05 \times (-3.5) + 6.75 \times 0.65 = 7.535\%$$

Expected return on market index

$$0.25 \times 5.9925 + 0.10 \times 8.8525 + 0.50 \times 8.478 + 0.15 \times 7.535 = 7.7526\%$$

Method II

Expected return on the market index

$$= 4.5\% + [0.1 \times 0.9 + 0.25 \times 0.8 + 0.15 \times 0.85 + 0.50 \times 1.165] \times 6.85 + [(0.75 \times 0.10 + 1.39 \times 0.25 + 2.05 \times 0.15 + 2.75 \times 0.5)] \times (-3.5) + [(1.25 \times 0.10 + 1.35 \times 0.25 + 6.75 \times 0.15 + 8.65 \times 0.50)] \times 0.65$$

$$= 4.5 + 6.85 + (-7.3675) + 3.77 = 7.7525\%.$$

(ii) Using CAPM,

$$\text{Small cap growth} = 4.5 + 6.85 \times 0.80 = 9.98\%$$

$$\text{Small cap value} = 4.5 + 6.85 \times 0.90 = 10.665\%$$

$$\text{Large cap growth} = 4.5 + 6.85 \times 1.165 = 12.48\%$$

$$\text{Large cap value} = 4.5 + 6.85 \times 0.85 = 10.3225\%$$

Expected return on market index

$$= 0.25 \times 9.98 + 0.10 \times 10.665 + 0.50 \times 12.45 + 0.15 \times 10.3225 = 11.33\%$$

(iii) Let us assume that Mr. NK will invest $X_1\%$ in Small cap value stock and $X_2\%$ in Large cap growth stock

$$X_1 + X_2 = 1$$

$$0.90 X_1 + 1.165 X_2 = 1$$

$$0.90 X_1 + 1.165(1 - X_1) = 1$$

$$0.90 X_1 + 1.165 - 1.165 X_1 = 1$$

$$0.165 = 0.265 X_1$$

$$\frac{0.165}{0.265} = X_1$$

$$0.623 = X_1 \text{ and } X_2 = 0.377$$

62.30% in Small cap value stocks

37.70% in Large cap growth stocks.

(6 marks)

(b) (i) NAV of the Fund

$$= \frac{\text{₹ } 1,97,000 + \text{₹ } 2,41,30,000 + \text{₹ } 26,44,000 + \text{₹ } 6,74,90,000 + \text{₹ } 7,77,000}{800000}$$

$$= \frac{\text{₹ } 9,52,38,000}{800000} = \text{₹ } 119.0475 \text{ rounded to ₹ } 119.05$$

(b) The revised position of fund shall be as follows:

Shares	No. of shares	Price	Amount (₹)
A Ltd.	10000	19.70	1,97,000
B Ltd.	50000	482.60	2,41,30,000
C Ltd.	28000	264.40	74,03,200
D Ltd.	100000	674.90	674,90,000
E Ltd.	30000	25.90	7,77,000
Cash			<u>2,40,800</u>
			<u>10,02,38,000</u>

$$\text{No. of units of fund} = 800000 + \frac{5000000}{119.0475} = 842000 \quad (4 \text{ marks})$$

(c) VAR is a measure of risk of investment. This investment can be a portfolio, capital investment or foreign exchange etc., VAR answers two basic questions -

- (i) What is worst case scenario?
- (ii) What will be loss?

Following are main features of VAR

- (i) Components of Calculations: VAR calculation is based on following three components:
 - (a) Time Period
 - (b) Confidence Level – Generally 95% and 99%
 - (c) Loss in percentage or in amount
- (ii) Statistical Method: It is a type of statistical tool based on Standard Deviation.
- (iii) Time Horizon: VAR can be applied for different time horizons say one day, one week, one month and so on.
- (iv) Probability: Assuming the values are normally attributed, probability of maximum loss can be predicted. (4 marks)

2. (a) **Calculation of Variance and Standard Deviation**

Project K

Expected Net Cash Flow

$$= (0.10 \times 11) + (0.20 \times 13) + (0.40 \times 15) + (0.20 \times 17) + (0.10 \times 19)$$

$$= 1.1 + 2.6 + 6 + 3.4 + 1.9 = 15$$

$$\sigma^2 = 0.10(11 - 15)^2 + 0.20(13 - 15)^2 + 0.40(15 - 15)^2 + 0.20(17 - 15)^2 + 0.10(19 - 15)^2$$

$$= 1.6 + 0.8 + 0 + 0.8 + 1.6 = 4.8$$

$$\sigma = \sqrt{4.8} = 2.19$$

Project S

Expected Net Cash Flow

$$= (0.10 \times 9) + (0.25 \times 13) + (0.30 \times 17) + (0.25 \times 21) + (0.10 \times 25)$$

$$= 0.9 + 3.25 + 5.1 + 5.25 + 2.5 = 17$$

$$\sigma^2 = 0.1(9 - 17)^2 + 0.25(13 - 17)^2 + 0.30(17 - 17)^2 + 0.25(21 - 17)^2 + 0.10(25 - 17)^2$$

$$= 6.4 + 4 + 0 + 4 + 6.4 = 20.8$$

$$\sigma = \sqrt{20.8} = 4.56$$

Calculation of Coefficient of Variation

$$\text{Coefficient of Variation} = \frac{\text{Standard Deviation}}{\text{Mean}}$$

$$\text{Project K} = \frac{2.19}{15} = 0.146$$

$$\text{Project S} = \frac{4.56}{17} = 0.268$$

Project S is riskier as it has higher Coefficient of Variation.

(6 marks)

(b) (i) Let P be the buyback price decided by R Ltd.

Market Capitalisation after Buyback

$$1.1P (\text{Original Shares} - \text{Shares Bought Back})$$

$$= 1.1P \left(10 \text{ lakhs} - \frac{27\% \text{ of } 100 \text{ lakhs}}{P} \right)$$

$$= 11 \text{ lakhs} \times P - 27 \text{ lakhs} \times 1.1 = 11 \text{ lakhs} P - 29.7 \text{ lakhs}$$

Again, $11 \text{ lakhs} P - 29.7 \text{ lakhs}$

$$\text{or } 11 \text{ lakhs} P = 210 \text{ lakhs} + 29.7 \text{ lakhs}$$

$$\text{or } P = \frac{239.7}{11} = ₹ 21.79 \text{ per share}$$

(ii) Number of Shares to be Bought Back :-

$$\frac{₹ 27 \text{ lakhs}}{₹ 21.79} = 1.24 \text{ lakhs (Approx.) or } 123910 \text{ share}$$

(iii) New Equity Shares:-

$$10 \text{ lakhs} - 1.24 \text{ lakhs} = 8.76 \text{ lakhs or } 1000000 - 123910 = 876090 \text{ shares}$$

$$\therefore \text{EPS} = \frac{3 \times 10 \text{ lakhs}}{8.76 \text{ lakhs}} = ₹ 3.43$$

Thus, EPS of R Ltd., increases to ₹ 3.43.

(4 marks)

(c) The techniques used for analyzing the industry wide factors are:

(a) *Regression Analysis*: Investor diagnoses the factors determining the demand for output of the industry through product demand analysis. Factors to be considered are GNP, disposable income, per capita consumption / income, price elasticity of demand. For identifying factors affecting demand, statistical techniques like regression analysis and correlation are used.

(b) *Input – Output Analysis*: It reflects the flow of goods and services through the economy, intermediate steps in production process as goods proceed from raw material stage through final consumption. This is carried out to detect changing patterns/trends indicating growth/decline of industries.

(4 marks)

3. (a) (i) Receipt under three proposals

(I) Proposal of Mr. Peter

$$\text{Invoicing in £ will produce} = \frac{€ 2.8 \text{ million}}{1.1965} = £ 2.340 \text{ million}$$

(II) Proposal of Mr. Wilson

$$\text{Forward Rate} = \text{€ } 1.1970 - 0.0055 = 1.1915$$

Using Forward Market hedge Sterling receipt would be:

$$\frac{\text{€ } 2.8 \text{ million}}{1.1915} = \text{£ } 2.35 \text{ million}$$

(III) Proposal of Ms. Karen

The equivalent sterling of the order placed based on future price (€1.1943)

$$= \frac{\text{€ } 2.8 \text{ million}}{1.1943} = \text{£ } 2,344,470 \text{ (rounded off)}$$

$$\text{Number of Contracts} = \frac{\text{£ } 2,344,470}{62,500} = 37 \text{ Contracts (to the nearest whole number)}$$

$$\text{Thus, € amount hedged by future contract will be} = 37 \times \text{£ } 62,500 = \text{£ } 23,12,500$$

$$\text{Buy Future at} \quad \quad \quad \text{€ } 1.1943$$

$$\text{Sell Future at} \quad \quad \quad \text{€ } \underline{1.1873}$$

$$\text{€ } \underline{0.0070}$$

$$\text{Total loss on Future Contracts} = 37 \times \text{£ } 62,500 \times \text{€ } 0.0070 = \text{€ } 16,188$$

After 6 months

$$\text{Amount Received} \quad \quad \quad \text{€ } 28,00,000$$

$$\text{Less: Loss on Future Contracts} \quad \quad \quad \text{€ } \underline{16,188}$$

$$\text{€ } \underline{27,83,812}$$

Sterling Receipts

$$\text{On sale of € at spot} = \frac{\text{€ } 27,83,812}{1.1873} = \text{£ } 2.3446 \text{ million}$$

Proposal of option (b) is preferable because the option (a) & (c) produces least receipts.

- (ii) Further, Mr. Wilson must be doubtful about Mr. Wilson's proposal as firm is entering in a competitive market and invoicing in seller's currency may not be acceptable to the buyers. **(6 marks)**

(b) Nominal Interest or Bond Equivalent Yield = $\left[\frac{F-P}{P} \right] \times \frac{12}{M} \times 100$

Where

F= Face Value

P= Issue Price

$$= \frac{1,00,000 - 97,550}{97,550} \times \frac{12}{3} \times 100 = 0.025115 \times 4 \times 100 = 10.046 = 10.05\% \text{ p.a.}$$

$$\text{Effective interest rate} = \left[1 + \frac{0.1005}{4} \right]^4 - 1 = 10.435\% \text{ p.a.}$$

Cost of Funds to the Company

Effective Interest	10.435%
Brokerage (0.150 × 4)	0.60%
Rating Charge	0.50%
Stamp duty (0.175 × 4)	<u>0.70%</u>
	<u>12.235%</u>

Alternatively, effective interest rate can also be computed as follows:

Let i be the interest rate then

$$97,750 = \frac{100,000}{1 + i \times \frac{3}{12}}$$

$$i = 10.046$$

Cost of Funds to the Company

Effective Interest	10.046%
Brokerage (0.150 × 4)	0.60%
Rating Charge	0.50%
Stamp duty (0.175 × 4)	<u>0.70%</u>
	<u>11.846%</u>

(4 marks)

(c) Following are the steps involved in securitization mechanism:

1. **Creation of Pool of Assets:** The process of securitization begins with creation of pool of assets by segregation of assets backed by similar type of mortgages.
2. **Transfer to SPV:** Once assets have been pooled, they are transferred to Special Purpose Vehicle (SPV) especially created for this purpose.
3. **Sale of Securitized Papers:** SPV designs the instruments based on nature of interest, risk, tenure, pool of assets etc.
4. **Administration of assets:** The administration of assets is sub-contracted back to originator which collects principal and interest from underlying assets and transfer it to SPV, which works as a servicer/ conduit typically for an agreed fee.
5. **Recourse to Originator:** Performance of securitized papers depends on the performance of underlying assets and unless specified otherwise in case of default by debtors, receivables go back to originator from SPV.
6. **Repayment of funds:** SPV will repay the funds to the investor in form of interest and principal that arises from the assets pooled.
7. **Credit Rating to Instruments:** Sometime before the sale of securitized instruments credit rating can be done to assess the risk of the issuer.

(4 marks)

OR

The factors affecting Value of an Option are mentioned below:

- (a) **Price Movement of the Underlying:** The value of calls and puts are affected by changes in the underlying stock price in a relatively straightforward manner.
- (b) **Time till expiry:** The option's future expiry, at which time it may become worthless, is an important and key factor of every option strategy.
- (c) **Volatility in Stock Prices:** SV is a statistical measure of the past price movements of the stock; it tells you how volatile the stock has actually been over a given period of time.
- (d) **Interest Rate-** Another feature which affects the value of an Option is the time value of money. The greater the interest rates, the present value of the future exercise price are less.

(4 marks)

4. (a) (i) The difference in yield curve may due to the lower credit rating of ABC Ltd. compared to XYZ Ltd.

- (ii) DEF Bank will fix interest rate for 2V3 FRA after 2 years as follows:

XYZ Ltd.

$$(1+r) (1+0.0420)^2 = (1+0.0448)^3$$

$$(1+r) (1.0420)^2 = (1.0448)^3$$

$$r = 5.04\%$$

Bank will quote 5.04% for a 2V3 FRA.

ABC Ltd.

$$(1+r) (1+0.0548)^2 = (1+0.0578)^3$$

$$(1+r) (1.0548)^2 = (1.0578)^3$$

$$r = 6.38\%$$

Bank will quote 6.38% for a 2V3 FRA.

- (iii) Interest payable by XYZ Ltd. under two scenarios will be computed as follows:

		4.50% - Option is allowed to be lapsed	5.50% - Option is Exercised
Interest	₹ 100 crores X 4.50%	₹ 4.50 crores	-
	₹ 100 crores X 5.04%*	-	₹ 5.04 crores
Premium (Cost of Option)	₹ 100 crores X 0.10%	₹ <u>0.10 crores</u>	₹ <u>0.10 crores</u>
		<u>4.60 crores</u>	<u>5.14 crores</u>

* Since after 2 years 1 year interest rate turned out to be 5.50%, it will be beneficial for XYZ Ltd. to exercise its option. **(4 marks)**

- (b) (i) Equity Beta

To calculate Equity Beta first we shall calculate Weighted Average of Asset Beta as follows:

$$= 1.45 \times 0.74 + 1.20 \times 0.26$$

$$= 1.073 + 0.312 = 1.385$$

Now we shall compute Equity Beta using the following formula:

$$\beta_{\text{Asset}} = \beta_{\text{Equity}} \left[\frac{E}{E + D(1 - t)} \right] + \beta_{\text{Debt}} \left[\frac{D(1 - t)}{E + D(1 - t)} \right]$$

Accordingly,

$$1.385 = \beta_{\text{Equity}} \left[\frac{410}{410 + 170} \right] + \beta_{\text{Debt}} \left[\frac{170}{410 + 170} \right]$$

$$1.385 = \beta_{\text{Equity}} \left[\frac{410}{580} \right] + 0.24 \left[\frac{170}{580} \right]$$

$$\beta_{\text{Equity}} = 1.86$$

(ii) Equity Beta on change in Capital Structure

Amount of Debt to be raised:

Particulars	Value
Total Value of Firm (Equity ₹ 410 cr + Debt ₹ 170 cr)	₹580 Cr
Desired Debt Equity Ratio	1.90 : 1.00
Desired Debt Level = $\frac{\text{Total Value} \times \text{Debt Ratio}}{\text{Debt Ratio} + \text{Equity Ratio}}$	₹ 380 Cr
Less: Value of Existing Debt	(₹ 170 Cr)
Value of Debt to be Raised	₹ 210 Cr

$$\begin{aligned} \text{Equity after Repurchase} &= \text{Total value of Firm} - \text{Desired Debt Value} \\ &= ₹ 580 \text{ Cr} - ₹ 380 \text{ Cr} \\ &= ₹ 200 \text{ Cr} \end{aligned}$$

Weighted Average Beta of KGFL:

Source of Finance	Investment (₹ Cr)	Weight	Beta	Weighted Beta
Equity	200	0.345	$\beta_{(E = x)}$	0.345x
Debt – 1	170	0.293	0.35	0.103
Debt – 2	210	0.362	0.40	0.145
	580	Weighted Average Beta		0.248 + (0.345x)

$$\beta_{\text{KGFL}} = 0.248 + 0.345x$$

$$1.385 = 0.248 + 0.345x$$

$$0.345x = 1.385 - 0.248$$

$$X = 1.137/0.345 = 3.296$$

$$\beta_{\text{KGFL}} = 3.296$$

(6 marks)

(c) Three main types of fund structure exist which are as follows:

(i) *Domestic Funds:* Domestic Funds (i.e. one which raises funds domestically) are usually structured as:

- 1) a domestic vehicle for the pooling of funds from the investor, and
- 2) a separate investment adviser that carries those duties of asset manager.

The choice of entity for the pooling vehicle falls between a trust and a company, with the trust form prevailing due to its operational flexibility.

(ii) *Offshore Funds:* Two common alternatives available to offshore investors are: the “offshore structure” and the “unified structure”.

Offshore structure:

Under this structure, an investment vehicle makes investments directly into Indian portfolio companies. The assets are managed by an offshore manager, while the investment advisor in India carries out the due diligence and identifies deals.

Unified Structure:

When domestic investors are expected to participate in the fund, a unified structure is used. Overseas investors pool their assets in an offshore vehicle that invests in a locally managed trust, whereas domestic investors directly contribute to the trust.

(4 marks)

5. (a) (i) (1) To compute the beta of 10th security first we shall compute overall weighted beta as follows:

Let weighted β of the Portfolio is w , then,

$$5 = \frac{994450}{8767.07 \times 25} \times w$$

$$w = 1.102 \text{ approximately}$$

Let beta of 10th security is β then,

$$1.102 = 0.90 \times 1.10 + 0.10 \times \beta$$

$$\beta = 1.12$$

- (2) The main reason for the profit in cash position might be due to reason that contrary to her expectation fall in the value of cash position there may be increase in value of cash position or decrease in the stock price may be lesser than 2%.

(ii) (1) Future Price = Spot + Cost of Carry – Dividend

$$= ₹ 125 + (₹ 125 \times 0.08) - ₹ 4 = ₹ 131$$

$$\text{Price of one future contract} = 1000 \text{ share} \times ₹ 131 = ₹ 1,31,000$$

- (2) Price decrease by 6%

$$\text{Market Price} = ₹ 125 \times 94\% = ₹ 117.50$$

Then, price of one future contract

$$= ₹ 117.50 + (₹ 117.50 \times 0.08) - ₹ 4 = ₹ 122.90$$

$$= ₹ 122.90 \times 1000 = ₹ 1,22,900$$

- (3) If the investor has taken a long position, decrease in price will result in **loss** for the investor.

Amount of loss will be:

$$₹ 1,31,000 - ₹ 1,22,900 = ₹ 8,100$$

(8 Marks)

- (b) (i) By entering into an FRA, firm shall effectively lock in interest rate for a specified future in the given it is 6 months. Since, the period of 6 months is starting in 3 months, the firm shall opt for 3 × 9 FRA locking borrowing rate at 5.94%. In the given scenarios, the net outcome shall be as follows:

	If the rate turns out to be 4.50%	If the rate turns out to be 6.50%
FRA Rate	5.94%	5.94%
Actual Interest Rate	4.50%	6.50%
Loss/ (Gain)	1.44%	(0.56%)
FRA Payment / (Receipts)	$€50 \text{ m} \times 1.44\% \times \frac{1}{2}$ = €360,000	$€50 \text{ m} \times 0.56\% \times \frac{1}{2}$ = (€140,000)

Interest after 6 months on €50 Million at actual rates	= €50m × 4.5% × ½ = €1,125,000	= €50m × 6.5% × ½ = €1,625,000
Net Out Flow	€ 1,485,000	€1,485,000

Thus, by entering into FRA, the firm has committed itself to a rate of 5.94%

as follows: $\frac{€ 1,485,000}{€ 50,000,000} \times 100 \times \frac{12}{6} = 5.94\%$

- (ii) Since firm is a borrower it will like to off-set interest cost by profit on Future Contract. Accordingly, if interest rate rises it will gain hence it should sell interest rate futures.

$$\begin{aligned} \text{No. of Contracts} &= \frac{\text{Amount of Borrowing}}{\text{Contract Size}} \times \frac{\text{Duration of Loan}}{3 \text{ months}} \\ &= \frac{€ 50,000,000}{€ 50,000} \times \frac{6}{3} = 2000 \text{ Contracts} \end{aligned}$$

The final outcome in the given two scenarios shall be as follows:

	If the interest rate turns out to be 4.5%	If the interest rate turns out to be 6.5%
<i>Futures Course Action:</i>		
Sell to open	94.15	94.15
Buy to close	95.50 (100 - 4.5)	93.50 (100 - 6.5)
Loss/ (Gain)	1.35%	(0.65%)
Cash Payment (Receipt) for Future Settlement	€50,000×2000× 1.35%×3/12 = €337,500	€50,000×2000×0.65% ×3/12 = (€162,500)
Interest for 6 months on €50 million at actual rates	€50 million × 4.5% × ½ = €11,25,000	€50 million × 6.5% × ½ = €16,25,000
	€1,462,500	€1,462,500

Thus, the firm locked itself in interest rate $\frac{€ 1,462,500}{€ 50,000,000} \times 100 \times \frac{12}{6} = 5.85\%$

(6 Marks)

6. (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.

(8 Marks)

(b) **Working Notes:**

(i) **The Earnings of S Ltd.**

	₹ lakh
Earnings of C Ltd.	10000
Earnings of D Ltd.	5800
	15800
Growth	0.08
Earnings of S Ltd. (15800 X 1.08)	17064

(ii) **Market Value of S Ltd.**

	₹ lakh
Earnings of S Ltd.	17064
P/E Ratio (10+9)/2	9
Market Value of S Ltd.	153576

(iii) **No. of shares in S Ltd.**

No. of shares of C Ltd.	4000
No. of shares issued to P Ltd.	3000
No. of shares of C Ltd.	7000

Gain to Shareholders of P Ltd.

Share of Shareholders of P Ltd. in S Ltd. (3000/7000) x 153576	₹ 65818.29 lakh
Market Value of P Ltd. before merger (5800 X 10)	₹ 58000.00 lakh
Gains to Shareholders	₹ 7818.29 lakh
No. of Shares (before merger)	1000 lakh
Gain Per Share	₹ 7.82

(6 Marks)