Mock Test Paper - Series II: April, 2026

Date of Paper: 04 April, 2026

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

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:

1. The shape of the yield curve given in the data can best be described as.....

   (a) Inverted

   (b) Flat

   (c) Normal (upward sloping)

   (d) Humped

2. Which bond carries the highest interest rate risk (price sensitivity)?

   (a) 1-year bond

   (b) 5-year bond

   (c) 10-year bond

   (d) 30-year bond

3. If inflation expectations increase sharply, the most immediate impact will likely be seen on yield curve.

   (a) Yield curve will become flat.

   (b) Yield curve will become humped.

   (c) Entire yield curve shifting upward

   (d) Entire yield curve shifting downward **(3 x 2 = 6 Marks)**

Case Scenario II

Mr. X, an investor buys the stocks of WBL Limited worth ₹ 21,60,000 due to very strong fundamentals. Since last 3 months, the market sentiment is weak and witnessed a significant volatility and considered to remain weak for about the next three months. Keeping in the mind volatility in the market, Mr. X is planning to hedge his portfolio in the future market. The Beta of WBL stock is 1.3 and the current value of NIFTY is 2250 and 3 months future is selling at 2310. The current market price of the WBL stock is ₹ 240. Each Nifty future can be trade in units of 240 only.

Assume there is no transaction cost and M to M Margin.

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

4. Number of future contract to be buy/sell to hedge WBL stock against expected fall in the market (rounded of contracts) ……

   (a) Buy 6 future contracts

   (b) Sell 5 future contracts

(c) Buy 5 future contracts

(d) Sell 6 future contracts

5. If Nifty index fall by 10% from 2250 to 2025 and WBL stock falls to ₹ 212, what will be Net Gain/Loss if portfolio was hedged on NIFTY future?

(a) Net Gain ₹ 3,42,000

(b) Net Gain ₹ 3,02,100

(c) Net Gain ₹ 50,100

(d) Net Gain ₹ 90,000

6. If NIFTY index rises by 6% from 2250 to 2385 and WBL stock rises to ₹ 255, what will be Net Gain/Loss when portfolio was in hedged?

(a) Net Loss ₹ 90,000

(b) Net Gain ₹ 45,000

(c) Net Gain ₹ 1,35,000

(d) Net Gain ₹ 90,000 **(3 x 2 = 6 Marks)**

Case Scenario III

A Ltd. paid a dividend of ₹ 5 for the last year. The dividend is expected to grow at 25% for the next 6 years and at 10% per annum thereafter. The standard deviation of market return and A Ltd.'s share is 12% and 18% respectively. The correlation between market return and A Ltd. share return is 0.3733. The return of government bond is 13% per annum and market return is expected to be around 20%.

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

7. The beta (β) of A Ltd.'s share is closest to……

(a) 0.42

(b) 0.56

(c) 0.67

(d) 0.84

8. The equity risk premium as per the given data is……

(a) 5%

(b) 6%

(c) 7%

(d) 8%

9. The valuation approach can be used to compute the intrinsic value of A Ltd. shares is……

(a) Single-stage Dividend Discount Model

(b) CAPM valuation model

(c) Two-stage Dividend Discount Model

(d) Price–Earnings valuation model **(3 x 2 = 6 Marks)**

Case Scenario IV

On 3rd April, 2025, Royal Bank quotes the following:

	Bid	Ask
Spot Exchange Rate (US$ 1)	₹ 84.2525	₹ 85.5945
2 months' swap points	60	80
3 months' swap points	150	178

In a spot transaction, delivery is made after two days.

Assume spot date as 5th April, 2025 and 1 swap point = 0.0001.

Calculation up to 4 decimal places.

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

10. The swap points for 2 months & 15 days (i.e., for 20th June, 2025) will be……

(a) Bid – 90 and Ask – 98

(b) Bid – 105 and Ask – 129

(c) Bid – 98 and Ask – 90

(d) Bid – 129 and Ask – 105

11. Foreign exchange rate for 20th June, 2025 will be ……

(a) Bid – ₹ 85.2525 and Ask – ₹ 84.5945

(b) Bid – ₹ 84.5945 and Ask – ₹ 85.2525

(c) Bid – ₹ 84.2630 and Ask – ₹ 85.6074

(d) Bid – ₹ 85.6074 and Ask – ₹ 84.2630

12. On an average rate, the annual rate of premium/discount of US $ on Indian ₹ will be ……

(a) Bid – 0.0498% and Ask – 0.0524% (Premium)

(b) Bid – 0.0598% and Ask – 0.0723% (Discount)

(c) Bid – 0.0723% and Ask – 0.0598 % (Premium)

(d) Bid – 0.0598% and Ask – 0.0723% (Premium) **(3 x 2 = 6 Marks)**

Case Scenario V

A Ltd. is planning to borrow an amount of ₹ 300 crores for a period of 3 months in the coming 6 months' time from now. The current rate of interest is 9% p.a., but it is likely to go up in 6 months' time. The company wants to hedge itself against the likely increase in interest rate.

You as CFO has been asked to suggest both traditional as well as modern methods to hedge interest rate risk.

Suppose the banker of A Ltd. has quoted the following Forward Rate Agreement (FRA) rates:

3 x 6	8.10%	8.15%
6 x 9	8.20%	8.30%
9 x 12	8.35%	8.45%

A Ltd. has already issued redeemable bonds or debentures.

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

13. In an FRA contract, the company intending to borrow funds in future should…….

(a) buy FRA at bid rate.

(b) sell FRA at bid rate.

(c) buy FRA at offer rate.

(d) sell FRA at offer rate.

14. If interest rates rise above the FRA rate, the A Ltd. under FRA will…….

(a) incur loss and pay banker.

(b) neither gain nor lose.

(c) receive compensation from banker.

(d) cancel the contract.

15. The FRA settlement amount is discounted because……

(a) interest rates are uncertain

(b) FRA is settled in advance

(c) principals are not exchanged

(d) only interest differential is paid **(3 x 2 = 6 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) The Investment portfolio of a Fund is as follows:

Government Bond	Coupon Rate (%)	Purchase Rate (FV ₹ 100 per Bond)	Duration (Years)
GOI 2026	11.68	106.50	3.50
GOI 2030	7.55	105.00	6.50
GOI 2035	7.38	105.00	7.50
GOI 2042	8.35	110.00	8.75
GOI 2052	7.95	101.00	13.00

Face value of total Investment is ₹ 5 crores in each Government Bond.

Required:

(i) Identify the type of the Fund.

(ii) Calculate NAV per unit of the Fund if number of units is 2.50 crore.

(iii) Suggest a suitable action to reduce risk by churning out investment portfolio in the following scenario:

A. Interest rates are expected to lower by 25 basis points.

B. Interest rates are expected to raise by 75 basis points.

Also calculate the revised duration of investment portfolio in each scenario.

Note: Use simple average to make calculations. **(10 Marks)**

(b) Identify the type of risks to which the Bond Funds are exposed to. **(4 Marks)**

2. (a) You, a foreign exchange dealer of your bank, are informed that your bank has sold a T.T. on Copenhagen for Danish Krone 10,00,000 at the rate of Danish Krone (DKK) 1 = INR 14.4480. You are required to cover the transaction either in London or New York market though your bank has correspondent banking relationship in London. The rates on that date are as under:

Mumbai-London	INR 124.2000	INR 124.2300
Mumbai-New York	INR 94.0100	INR 94.0390
London-Copenhagen	DKK 08.6000	DKK 8.6150
New York-Copenhagen	DKK 06.5100	DKK 06.5250

Advise the bank in which market it will be better to cover the transaction, London or New York, and what will be the exchange profit or loss on the transaction?

Note: 1. Ignore brokerages.

2. All intermediate calculations should be rounded off to two decimal places, while the final computation in INR should be rounded off to the nearest whole number. **(8 Marks)**

(b) Explain main features of the Value at Risk (VaR). **(6 Marks)**

3. (a) D and Co.is a company which installs pipes for supply of oxygen in the hospitals as per their specifications. It is planning to invest ₹ 40 crore in a new facility to convert vans and trucks into ambulance. Each ambulance will be designed and built according to customer requirements. D and Co. expects ambulance production and sales in the first four years of operation to be as follows:

Year	**1**	**2**	**3**	**4**
Ambulances produced and sold	250	300	450	450

The selling price for an ambulance depends on the van or truck which is converted, the quality of the units installed and the extent of conversion work required. D and Co. has undertaken research into likely sales and costs of different kinds of ambulances which could be selected by customers, as follows:

Ambulance type	**Basic**	**Standard**	**Deluxe**
Probability of selection	20%	45%	35%
Selling price (₹/unit)	30,00,000	42,00,000	72,00,000
Conversion cost (₹/unit)	23,00,000	29,00,000	40,00,000

Fixed costs of the production facility are expected to depend on the volume of ambulance production as follows:

Production volume (units/year)	**200–299**	**300–399**	**400–499**
Fixed costs (₹ crore/year)	40	50	55

The applicable tax rate for D and Co. is 28% per year, being settled in the year in which it arises. The company can claim tax allowable depreciation on the cost of the investment on a straight-line basis over ten years.

D and Co. evaluates investment projects using an after-tax discount rate of 11%.

Required:

(i) Advise the company on the financial viability of the planned investment for the first four years of operation if tax benefit on unabsorbed depreciation for the remaining period will not available.

(ii) Advise the company on the financial viability of the planned investment continuing to produce and sell ambulances beyond the first four years if after the fourth year of operation, D and Co. expects to continue to produce and sell 450 ambulances per year for the foreseeable future.

Note: (1) Use PV Factors rounded off upto three decimal points.

(2) Present all calculation in ₹ Crore rounded off upto three decimal points. **(10 Marks)**

(b) Explain the features of Securitization. **(4 Marks)**

4. (a) A has portfolio having following features:

Security	**β**	**Random Error σ_{ei}**	**Weight**
L	1.60	7	0.25
M	1.15	11	0.30
N	1.40	3	0.25
K	1.00	9	0.20

If the risk (σ_P) of the portfolio is 25.03 then suggest what will be the standard deviation (σ_m) of the market index.

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

(b) Carry out a comparative evaluation of three different policies of portfolio rebalancing on the basis of following three points:

(i) Pay-off Line

(ii) Protection in Down/ Up Markets

(iii) Performance in flat market **(4 Marks)**

Either

(c) Explain the concept of 'Unicorn' and its main features.

Or

Explain Venture Capital method for valuing startups. **(4 Marks)**

5. (a) During the audit of the Weak Bank (W), RBI has suggested that the Bank should either merge with another bank or may close down. Strong Bank (S) has submitted a proposal of merger of Weak Bank with itself. The relevant information and Balance Sheets of both the companies are as under:

Particulars	Weak Bank (W)	Strong Bank (S)	Assigned Weights (%)
Gross NPA (%)	40	5	30
Capital Adequacy Ratio (CAR) Total Capital/ Risk Weight Asset	5	16	28
Market price per Share (MPS)	12	96	32
Book value			10
Trading on Stock Exchange	Irregular	Frequent	

Balance Sheet **(₹ in Lakhs)**

Particulars	Weak Bank (W)	Strong Bank (S)
Paid up Share Capital (₹ 10 per share)	150	500
Reserves & Surplus	80	5,500
Deposits	4,000	44,000
Other Liabilities	890	2,500
Total Liabilities	**5,120**	**52,500**
Cash in Hand & with RBI	400	2,500

Balance with Other Banks	-	2,000
Investments	1,100	19,000
Advances	3,500	27,000
Other Assets	70	2,000
Preliminary Expenses	50	-
Total Assets	**5,120**	**52,500**

You are required to

(i) Calculate Swap ratio based on the above weights:

(ii) Ascertain the number of Shares to be issued to Weak Bank;

(iii) Prepare Balance Sheet after merger; and

(iv) Calculate CAR and Gross NPA of Strong Bank after merger.

Note: Present all calculation in ₹ lac rounded off upto two decimal points.

(10 Marks)

(b) The data given below relates to a convertible bond:

Face value	₹ 250
Coupon rate	12%
No. of shares per bond	20
Market price of share	₹ 12
Straight value of bond	₹ 235
Market price of convertible bond	₹ 265

Calculate:

(i) Stock value of bond.

(ii) The percentage of downside risk.

(iii) The conversion premium

(iv) The conversion parity price of the stock. **(4 Marks)**

6. (a) Mr. X is of the opinion that market has recently shown the Weak Form of Market Efficiency. To test the validity of his impression he has collected the following data relating to the movement of the SENSEX for the last 20 days.

Days	Open	High	Low	Close
1	33470.94	33513.79	33438.03	33453.99
2	33453.64	33478.11	33427.82	33434.83
3	33414.06	33440.29	33397.65	33431.93
4	33434.94	33446.18	33377.78	33383.41
5	33372.92	33380.27	33352.12	33370.93
6	33375.85	33389.49	33331.42	33340.75
7	33340.89	33340.89	33310.95	33330.98
8	33326.84	33340.91	33306.17	33335.08
9	33307.16	33328.22	33296.43	33301.97
10	33298.64	33318.60	33254.28	33259.03
11	33260.04	33228.85	33241.66	33251.53
12	33255.92	33289.46	33249.46	33285.89
13	33288.86	33535.67	33255.98	33329.28
14	33335.00	33346.21	33276.72	33284.17
15	33293.83	33310.86	33278.54	33298.78
16	33300.02	33337.79	33300.02	33325.38
17	33323.36	33356.34	33322.44	33329.95
18	33322.81	33345.98	33317.44	33319.67
19	33317.51	33321.18	33294.19	33302.32
20	33290.86	33324.96	33279.62	33319.61

You are required to test the **Weak Form of Market Efficiency** using Auto-Correlation test, taking time lag of 10 days.

Note: Round off all calculations upto 2 decimal points. **(8 Marks)**

(b) Derivative Bank entered into a plain vanilla swap through on OIS (Overnight Index Swap) on a principal of ₹ 10 crores and agreed to receive MIBOR overnight floating rate for a fixed payment on the principal. The swap was entered into on Monday, 2nd August, 2010 and was to commence on 3rd August, 2010 and run for a period of 7 days.

Respective MIBOR rates for Tuesday to Monday were:

7.75%,8.15%,8.12%,7.95%,7.98%,8.15%.

If Derivative Bank received ₹ 317 net on settlement, calculate Fixed rate and interest under both legs.

Notes:

(i) Sunday is Holiday.

(ii) Work in rounded rupees and avoid decimal working.

(iii) Assume 365 days a year. **(6 Marks)**

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ANSWER TO PART – I CASE SCENARIO BASED MCQS

1. Option (c)

2. Option (d)

3 Option (c)

4. Option (b)

5. Option (d)

6. Option (b)

7. Option (b)

8. Option (c)

9. Option (c)

10. Option (b)

11. Option (c)

12. Option (d)

13. Option (c)

14. Option (c)

15. Option (b)

ANSWERS OF PART – II DESCRIPTIVE QUESTIONS

1. (a) (i) This type of Fund is a Gilt Fund as the amount of fund is invested in dated Government Securities.

(ii) To calculate NAV per unit first we shall calculate of actual investment of Funds as follows:

Security	Purchase price	Investment (₹ in lakhs)
GOI 2026	106.50	532.50*

GOI 2030	105.00	525.00
GOI 2035	105.00	525.00
GOI 2042	110.00	550.00
GOI 2052	101.00	505.00
	Total	2,637.50

$$* \frac{₹\ 5\ \text{crores}}{₹\ 100 \times 1,00,000} \times R`106.50$$

Accordingly, the NAV per units shall be:

$$\frac{₹\ 2637.50\ \text{Lakhs}}{250\ \text{Lakhs}} = ₹\ 10.55$$

(iii) Suitable action to churn out investment portfolio in following scenario is to reduce risk and to maximize profit or minimize losses.

$$\text{Average Duration} = \frac{3.5 + 6.5 + 7.5 + 8.75 + 13.00}{5} = \frac{39.25}{5} = 7.85 \text{ years}$$

(A) Interest rates are expected to be lower by 25 basis points in such case increase the average duration by purchasing GOI 2052 and disposing of GOI 2026.

$$\text{Revised average duration shall be} = \frac{39.25 - 3.5 + 13}{5}$$

$$= \frac{48.75}{5} = 9.75 \text{ years}$$

(B) Interest rates are expected to rise by 75 basis points in such case reduce the average duration by (*) Purchasing GOI 2030 and disposing of GOI 2052.

$$\text{Revised average duration shall be} = \frac{39.25 - 13 + 6.5}{5}$$

$$= \frac{32.75}{5} = 6.55 \text{ years}$$

(*) Purchasing of GOI 2026 is not beneficial as maturity period is very short and 75 basis points is comparatively higher change.

Thus, it can be said that the in first case the duration of portfolio is revised from 7.85 years to 9.75 years. In second case it stands revised from 7.85 years to 6.55 years. **(10 marks)**

(b) Like equity mutual funds, bond funds also have following risks.

- **Interest Rate Risk:** This risk relates to fluctuation in market value of Bond consequent upon the change in interest rate (YTM) as discussed in the chapter on Security Valuation. There is inverse relationship between market value of bond and interest rate. As interest rate goes up market value of Bond falls and vice versa.
- **Credit Risk:** This risk is similar to risk of default in repayment of loans or payment of interest or both by the borrowers of the funds. Thus, this risk takes place when a Mutual Fund invested money in the Bonds of a company which defaults in the payment of Interest or Principal. This risk is higher in case of companies with lower Credit Rating.
- **Prepayment Risk:** This risk is related to early refund of money by the issuer of Bonds before the date of maturity. This generally happens in case of falling interest rates when a company who already issued Bond at higher interest rate issues fresh Bonds at lower rate of interest exercising its right of early redemption of Callable Bonds and refunding the money raised out of fresh issue.
- **Reinvestment Risk:** In a falling interest rate scenario, on maturity of the Bonds on its due date, the maturity proceeds get invested at a lower rate of interest. This brings down the overall yield of the Portfolio. This is known as a Reinvestment Risk. This turns out to be favourable in a rising interest rate scenario. **(4 marks)**

2. (a) Amount realized on selling Danish Krone 10,00,000 at INR 14.4480 per Krone = INR 1,44,48,000.

Cover at London:

Bank buys Danish Krone at London at the market selling rate.

Pound sterling required for the purchase (DKK 10,00,000 ÷ DKK 8.6000) = GBP 1,16,279.07

Bank buys locally 1,16,279.07 for the above purchase at the market selling rate of INR 124.2300.

The rupee cost will be = INR 1,44,45,349

Profit (INR 1,44,48,000 - INR 1,44,45,349) = INR 2,651

Cover at New York:

Bank buys Krones at New York at the market selling rate.

Dollars required for the purchase of Danish Krone (DKK 10,00,000 ÷ 6.5100) = USD 1,53,609.83

Bank buys locally USD 1,53,609.83 for the above purchase at the market selling rate of INR 94.0390.

The rupee cost will be = INR 1,44,45,315

Profit (INR 1,44,48,000 - INR 1,44,45,315) = INR 2,685

Advice: Though the transaction covered through New York gets very slightly more profitable by INR 34 but it is advisable to cover the transaction through London market as the bank has correspondent banking relationship in the London.

(8 marks)

(b) 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.

(v) *Risk Control:* Risk can be controlled by setting limits for maximum loss.

(vi) *Z Score:* Z Score indicates how many standard Deviations is away from Mean value of a population. When it is multiplied with Standard Deviation it provides VAR. **(6 marks)**

3. (a) Working Notes:

1. Average selling price = (30,00,000 x 0·20) + (42,00,000 x 0·45) + (72,00,000 x 0·35) = ₹ 50,10,000 per unit

2. Average conversion cost = (23,00,000 x 0·20) + (29,00,000 x 0·45) + (40,00,000 x 0·35) = ₹ 31,65,000 per unit

3. Computation of Sales Income

Year	1	2	3	4
Sales volume (units/year)	250	300	450	450
Average selling price (₹ /unit)	50,10,000	50,10,000	50,10,000	50,10,000
Sales income (₹ crore/year)	125.25	150.30	225.45	225.45

4. Computation of Conversion cost

Year	1	2	3	4
Sales volume (units/year)	250	300	450	450
Average conversion cost (₹ /unit)	31,65,000	31,65,000	31,65,000	31,65,000
Conversion cost (₹ crore/ year)	79.125	94.950	142.425	142.425

5. Tax allowable depreciation = ₹ 40 crore/10 = ₹ 4 crore per year

Benefit of tax allowable depreciation = ₹ 4 crore x 0·28 = ₹ 1.12 crore per year

(i) Calculation of NPV over four years

Year	1	2	3	4
	₹ crore	₹ crore	₹ crore	₹ crore
Sales income	125.25	150.30	225.45	225.45
Conversion cost	(79.125)	(94.95)	(142.425)	(142.425)
Contribution	46.125	55.35	83.025	83.025
Fixed costs	(40)	(50)	(55)	(55)
Before-tax cash flow	6.125	5.35	28.025	28.025
Tax liability at 28%	(1.715)	(1.498)	(7.847)	(7.847)
Tax allowable depreciation benefits	1.120	1.120	1.120	1.120

After-tax cash flow	5.53	4.972	21.298	21.298
Discount at 11%	0·901	0·812	0·731	0·659
Present values	4.983	4.037	15.569	14.035
Total present value of Inflows				38.624
Initial investment				40.000
NPV				(1.376)

Advice: If only the first four years of operation are considered, the NPV of the planned investment is negative and so it would not be financially acceptable.

(ii) Ignoring tax allowable depreciation, after-tax cash flow from year five onwards will be:

₹ 28.025 crore – ₹ 7.847 crore = ₹ 20.178 crore per year

Present value of this cash flow in perpetuity = (₹ 20.178 crore /0·11) x 0·659 = ₹ 120.885 crore

There would be a further six years of tax benefits from tax allowable depreciation. The present value of these cash flows would be ₹ 1.12 crore x 2.787 = ₹ 3.121 crore

Increase in NPV of production and sales continuing beyond the first four years would be:

₹ 120.885 crore + ₹ 3.121 crore = ₹ 124.006 crore

In other words, NPV of the planned investment would be ₹ 122.632 crore (₹ 124.006 crore – ₹ 1.376 crore)

Advise: If production and sales beyond the first four years are considered, the NPV is strongly positive and so the planned investment is financially acceptable. **(10 marks)**

(b) The securitization has the following features:

(i) **Creation of Financial Instruments –** The process of securities can be viewed as process of creation of additional financial product of securities in market backed by collaterals.

(ii) **Bundling and Unbundling –** When all the assets are combined in one pool it is bundling and when these are broken into instruments of fixed denomination it is unbundling.

(iii) **Tool of Risk Management –** In case assets are securitized on non-recourse basis, then securitization process acts as a risk management tool as the risk of default is shifted from originator (of securities) to investor (in securities).

(iv) **Structured Finance –** In the process of securitization, financial instruments are tailor structured to meet the risk return trade off profile of the investor, and hence, these securitized instruments are considered as best examples of structured finance.

(v) **Trenching –** Portfolio of different receivable or loan or asset are split into several parts based on risk and return they carry called 'Tranche'. Each Trench carries a different level of risk and return.

(vi) **Homogeneity –** Under each tranche the securities issued are of homogenous nature and even meant for small investors who can afford to invest in small amounts. **(4 Marks)**

4. **(a)** The variance of Security's Return

$\sigma^2 = \beta_i^2 \sigma^2_m + \sigma^2_{\varepsilon i}$

The variance of the portfolio is 626.50. Let X be standard deviation of the index is X.

Accordingly, variance of various securities

		σ^2	Weight(w)	$\sigma^2 Xw$
L	$(1.60)^2 (X)^2 + 7^2 =$	$2.56X^2 + 49$	0.25	$0.64 X^2 + 12.25$
M	$(1.15)^2 (X)^2 + 11^2 =$	$1.32 X^2 + 121$	0.30	$0.40 X^2 + 36.30$
N	$(1.40)^2 (X)^2 + 3^2 =$	$1.96 X^2 + 9$	0.25	$0.49 X^2 + 2.25$
K	$(1.00)^2 (X)^2 + 9^2 =$	$1.00 X^2 + 81$	0.20	$0.20 X^2 + 16.20$
	Variance			$1.73 X^2 + 67$

Thus, $1.73 X^2 + 67 = 626.50$

$1.73 X^2 = 559.50$

$X^2 = 323.41$

$X = \sqrt{323.41} = 17.98$

Thus, standard deviation (σ_m) of the market index shall be approx. 17.98.

(6 marks)

(b) Comparative Evaluation

Basis	Buy & Hold Policy	Constant Mix Policy	Constant Proportion Portfolio Insurance
Pay-off Line	Straight	Concave	Convex
Protection in Down/Up Markets	Definitely poor in Down market	Not much in Down market but relatively poor in Up market	Good in Down market and performs well in Up market
Performance in flat market	Performs between Constant and CPPI	Tend to do well in flat market.	Performs poorly.

(4 marks)

(c) A Unicorn is a privately held start-up company which has achieved a valuation US$ 1 billion. This term was coined by venture capitalist Aileen Lee, first time in 2013. Unicorn, a mythical animal represents the statistical rarity of successful ventures.

A start-up is referred as a Unicorn if it has following features:

(i) A privately held start-up.

(ii) Valuation of start-up reaches US$ 1 Billion.

(iii) Emphasis is on the rarity of success of such start-up.

(iv) Other common features are new ideas, disruptive innovation, consumer focus, high on technology etc.

However, it is important to note that in case the valuation of any start-up slips below US$ 1 billion it can lose its status of 'Unicorn'. Hence a start-up may be Unicorn at one point of time and may not be at another point of time.

OR

As the name suggests, venture capital firms have made this famous. Such investors seek a return equal to some multiple of their initial investment or will strive to achieve a specific internal rate of return based on the level of risk they perceive in the venture.

The method incorporates this understanding and uses the relevant time frame in discounting a future value attributable to the firm.

The post-money value is calculated by discounting the rate representing an investor's expected or required rate of return.

The investor seeks a return based on some multiple of their initial investment. For example, the investor may seek a return of 10x, 20x, 30x, etc., their original investment at the time of exit.

New-age startups are disruptors in their own right and a necessary tool for global innovation and progress. By their very nature, startups disrupt set processes and industries to add value. In that process, they transcend traditional indicators of success like revenues, profitability, asset size, etc. Accordingly, it is no mean feat to uncover the actual value of a startup.

While the traditional methods fall short, there is no shortage of new innovative methods used to value startups based on their value drivers. However, the valuation of a startup is much more than the application of ways – it is about understanding the story of the future trajectory and communicating that narrative using substantial numbers. **(4 marks)**

5. (a) (i) Swap Ratio

Gross NPA	5:40	5/40 x 30%	0.0375
CAR	5:16	5/16 x 28%	0.0875
Market Price	12:96	12/96 x 32%	0.0400
Book Value Per Share	12:120	12/120x 10%	0.0100
			0.1750

Thus, for every share of Weak Bank, 0.1750 share of Strong Bank shall be issued.

Calculation of Book Value Per Share

Particulars	**Weak Bank (W)**	**Strong Bank (S)**
Share Capital (₹ Lakhs)	150	500
Reserves & Surplus (₹ Lakhs)	80	5,500
	230	6,000
Less: Preliminary Expenses (₹ Lakhs)	50	--
Net Worth or Book Value (₹ Lakhs)	180	6,000
No. of Outstanding Shares (Lakhs)	15	50
Book Value Per Share (₹)	12	120

(ii) No. of equity shares to be issued:

$$\frac{150}{10} \times 0.1750 = 2.625 \text{ lakh shares}$$

(iii) Balance Sheet after Merger

Calculation of Capital Reserve

Book Value of Shares	₹ 180.00 lac
Less: Value of Shares issued	₹ 26.25 lac
Capital Reserve	₹ 153.75 lac

Balance Sheet

	₹ lac		₹ lac
Paid up Share Capital	526.25	Cash in Hand & RBI	2900.00
Reserves & Surplus	5500.00	Balance with other banks	2000.00
Capital Reserve	153.75	Investment	20100.00
Deposits	48000.00	Advances	30500.00
Other Liabilities	3390.00	Other Assets	2070.00
	57570.00		**57570.00**

(iv) Calculation CAR & Gross NPA % of Bank 'S' after merger

$$\text{CAR / CRWAR} = \frac{\text{Total Capital}}{\text{Risky Weighted Assets}}$$

	Weak Bank	Strong Bank	Merged
Capital Adequacy Ratio (CAR)	5%	16%	
Total Capital	₹ 180 lac	₹ 6000 lac	₹ 6180 lac
Risky Weighted Assets	₹ 3600 lac	₹ 37500 lac	₹ 41100 lac

$$\text{CAR} = \frac{6180}{41100} \times 100 = 15.04\%$$

$$\text{GNPA Ratio} = \frac{\text{Gross NPA}}{\text{Gross Advances}} \times 100$$

	Weak Bank	Strong Bank	Merged
GNPA (Given)	0.40	0.05	
	$0.40 = \frac{GNPA_R}{₹\ 3500\ lac}$	$0.05 = \frac{GNPA_S}{₹\ 27000\ lac}$	
Gross NPA	₹ 1400 lac	₹ 1350 lac	₹ 2750 lac

(10 Marks)

(b) (i) Stock value or conversion value of bond

₹ 12 × 20 = ₹ 240

(ii) Percentage of the downside risk

$\frac{₹\ 265 - ₹\ 235}{₹\ 235}$ = 0.1277 or 12.77% or $\frac{₹\ 265 - ₹\ 235}{₹\ 265}$ = 0.1132 or 11.32%

This ratio gives the percentage price decline experienced by the bond if the stock becomes worthless.

(iii) Conversion Premium

$$\frac{\text{Market Price} - \text{Conversion Value}}{\text{Conversion Value}} \times 100$$

$$\frac{₹\ 265 - ₹\ 240}{₹\ 240} \times 100 = 10.42\%$$

(iv) Conversion Parity Price

$$\frac{\text{Bond Price}}{\text{No. of Shares on Conversion}}$$

$$\frac{₹\ 265}{20} = ₹\ 13.25$$

This indicates that if the price of shares rises to ₹ 13.25 from ₹ 12 the investor will neither gain nor lose on buying the bond and exercising it. Observe that ₹ 1.25 (₹ 13.25 – ₹ 12.00) is 10.42% of ₹ 12, the Conversion Premium. **(4 Marks)**

6. (a)

Period 1	Closing Prices	Change	Period 2	Closing Prices	Change
1	33453.99		11	33251.53	
2	33434.83	-19.16	12	33285.89	34.36
3	33431.93	- 2.90	13	33329.28	43.39
4	33383.41	- 48.52	14	33284.17	- 45.11
5	33370.93	- 12.48	15	33298.78	14.61
6	33340.75	- 30.18	16	33325.38	26.6
7	33330.98	-9.77	17	33329.95	4.57
8	33335.08	4.1	18	33319.67	-10.28
9	33301.97	- 33.11	19	33302.32	-17.35
10	33259.03	- 42.94	20	33319.61	17.29

X	Y	X^2	Y^2	XY
-19.16	34.36	367.11	1180.61	-658.34
-2.90	43.39	8.41	1882.69	-125.83
-48.52	-45.11	2354.19	2034.91	2188.74
-12.48	14.61	155.75	213.45	-182.33
-30.18	26.6	910.83	707.56	-802.79
-9.77	4.57	95.45	20.88	-44.65
4.1	-10.28	16.81	105.68	-42.15
-33.11	-17.35	1096.27	301.02	574.46
-42.94	17.29	1843.84	298.94	-742.43
$\sum X = -194.96$	$\sum Y = 68.08$	$\sum X^2 = 6848.66$	$\sum Y^2 = 6745.74$	$\sum XY = 164.68$
$\overline{X} = -21.66$	$\overline{Y} = 7.56$			

$$b = \frac{\sum XY - n\overline{XY}}{\sum X^2 - n(\overline{X})2} = \frac{164.68 - 9(-21.66)(7.56)}{6848.66 - 9(-21.66)^2} = 0.62$$

$$a = \overline{Y} - b\overline{X} = 7.56 - 0.62(-21.66) = 20.99$$

$$r^2 = \frac{a\sum Y + b\sum XY - n(\overline{Y})^2}{\sum Y^2 - n(\overline{Y})^2} = \frac{21.08(68.08) + 0.62(164.68) - 9(7.56)^2}{6745.74 - 9(7.56)^2}$$

$r^2 = 0.16$

$r = 0.40$

There is moderate degree of correlation between the returns of two periods hence it can be concluded that the market does not show the weak form of efficiency.

(8 Marks)

(b)

Day	Principal (₹)	MIBOR (%)	Interest (₹)
Tuesday	10,00,00,000	7.75	21,233
Wednesday	10,00,21,233	8.15	22,334
Thursday	10,00,43,567	8.12	22,256
Friday	10,00,65,823	7.95	21,795
Saturday & Sunday (*)	10,00,87,618	7.98	43,764
Monday	10,01,31,382	8.15	22,358
Total Interest @ Floating			1,53,740
Less: Net Received			317
Expected Interest @ fixed			1,53,423
Thus Fixed Rate of Interest			0.07999914
Approx.			8%

(*) i.e. interest for two days.

(6 Marks)