

May 26 CA FINAL AFM

Q NO	DESCRIPTION	MARKS	EASY / MEDIUM / HARD
MCQ CASE STUDY 1	SGB	6	EASY
MCQ CASE STUDY 2	REAL OPTIONS	6	MEDIUM
MCQ CASE STUDY 3	M&A DEFENSE	6	EASY
MCQ CASE STUDY 4	VAR	6	MEDIUM
MCQ CASE STUDY 5	FWD CONTRACTS	6	MEDIUM
Q 1(A)	BIL CURRENCY SWAP + NPV	6	EASY
Q 1(B)	H MODEL	4	HARD
Q 1(C)	SGR INFLATION CONCERNS	4	EASY
Q 2 (A)	APT	6	EASY
Q 2(B)	OPTIONS PAYOFF	4	EASY
Q 2(C)	VC FUNDING THEORY	4	EASY
Q 3(A)	APV	6	TOUGH
Q 3(B)	MF RETURNS	4	MEDIUM
Q 3(C)	SECURITIZATION THEORY	4	MEDIUM
Q 4(A)	OPTIMAL PORTFOLIO	6	TOUGH
Q 4(B)	NAV GEOMETRIC RETURN	4	MEDIUM
Q 4(C)	ELLIOT WAVE THEORY	4	MEDIUM
Q 4(C)	ZERO COST COLLAR FLOOR	4	TOUGH
Q 5(A)	FCFE	5	MEDIUM
Q 5(B)	INT GAP	7	TOUGH
Q 5(C)	TRANSACTION EXPOSURE	2	EASY
Q 6(A)	M&A	7	MEDIUM
Q 6 (B)	BLACK SCHOLES	7	MEDIUM
TOTAL		118	



(2)

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PART - I

(MCQ Portion)

9.9/10

30 Marks

- Answers to MCQs are to be marked on the OMR answer sheet as given on the cover page of the descriptive answer book only. Answer to MCQs, if written inside the descriptive answer book shall not be evaluated.
- Please write and darken correct MCQ booklet number in the OMR answer sheet. The correct MCQ booklet number must also be written in the attendance register.

Case Scenario - I

The Government of India issues a 5-year Sovereign Gold Bond (SGB) at an issue price of ₹ 5,000 per gram. An investor, Mr. JK, has purchased 200 grams SGB under this scheme. (The bond carries a coupon rate of 2.5% per annum, calculated as simple interest on the initial investment amount, with interest payable annually.) At the end of five years, the bond will be redeemed at the prevailing market price of gold. The annual interest received is taxable at the investor's applicable marginal income tax rate. (Any capital gain arising on redemption is taxable at 20% after considering the benefit of indexation.) The inflation rate during the holding period is assumed to be 4% per annum. ✓

From the information given above, choose the correct answer to the Question Nos. 1 to 3:

1. Assume SGB redeems at ₹ 6,800 per gram and Mr. JK is in 30% tax bracket. What is the net amount received after capital gains tax (20% with indexation)?

(A) 13,56,331

(B) 13,16,996

(C) 13,31,331

(D) 13,28,000

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$$\begin{aligned} & 13,60,000 \\ & (12,16,653) \\ & \hline & 1,43,347 \times 20\% \\ & 28,669 \end{aligned}$$

$$\begin{aligned} & 200 \times 200 = 3,60,000 \\ & 5000 \times 200 = 10,00,000 \\ & 10,00,000 + 28,669 = 10,28,669 \\ & 10,28,669 - 30\% = 7,19,847 \end{aligned}$$

①

(A) Redemption price $6800 \times 200 = 13,60,000$

COA.

 $5000 \times 200 = 10,00,000$

Indemnity.

 $(1.04)^5 = 1.216653$

(B) Indexed COA.

 $= 1216653$

CO. A - B

 $= 143347$

(C) CO. tax @ 20%.

 $= 28669$

Net Amt reqd. A - C $= 13,61,669 - 28,669$
 $= 13,31,331$

Q1 OPTION C

Q3 OPTION D

②

COA. $200 \times 5000 = 10,00,000$

Coupon.

2.5%.

Int reqd.

25000

tax @ 30%.

(7500)

Net inflow

17500

Coupon

2.5%.

tax @ 30%.

= 0.75%.

Net inflow

= 0.00%.

Q2.

OPTION B.

 $= -2.25\%$


(3)

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2. An investor Mr. JK purchases 200 grams of SGB at ₹ 5,000 per gram. The investor falls in the 30% tax bracket. Inflation is 4% per annum. What are the post-tax annual interest income and the approximate real post-tax return (%) on initial investment ?

- (A) ₹ 25,000 and 2.25%
(B) ₹ 17,500, and -2.25%
(C) ₹ 17,500 and 1.75%
(D) ₹ 17,500 and -1.75%

$$\begin{array}{r} 25,000 \\ (-) 30\% \\ \hline 17,500 \\ \hline 1,75,000 \end{array}$$

2

3. After 5 years, gold price becomes ₹ 6,800 per gram. Inflation is constant at 4% annually. What is the indexed cost of acquisition and taxable capital gain to Mr. JK ?

- (A) Indexed cost ₹ 12,00,000 ; Taxable gain ₹ 1,60,000
(B) Indexed cost ₹ 11,69,860 ; Taxable gain ₹ 1,90,140
(C) Indexed cost ₹ 12,16,653 ; Taxable gain ₹ 1,00,343
(D) Indexed cost ₹ 12,16,653 ; Taxable gain ₹ 1,43,347

1.217

10,00,000

Case Scenario - II

ill 6

MIS Itd SH

NewChem Ltd., a leading chemical manufacturing firm based in Telangana, is evaluating the installation of a new-generation solar power plant to meet the energy needs of its primary manufacturing unit. This initiative is part of NewChem's long-term sustainability and cost-reduction goals.

The total cost of installing the solar plant is ₹ 3.20 crore. Based on the current state electricity tariffs, the plant is projected to generate savings in electricity expenses of ₹ 25 lakh per year in perpetuity.

However, there is regulatory uncertainty. A new state government is expected to take office in one year and it is anticipated that electricity tariffs will be revised. Based on industry analysis, the annual savings from the solar plant could change to one of two possibilities:

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$$\begin{array}{r} 25 \\ 250 \\ \hline 0.1 \\ \hline 0.1 \times 0.04 = 0.004 \\ 0.1 - 0.004 = 0.096 \\ 0.096 \times 100 = 9.6\% \end{array}$$

○

Q4. Similar to ICAI SM Q.6 pg. 94b.

Inv 320 lacs.

Curr. Saving P.A 25 LPA. @ 9.5%.

PV = 263.1579.

High. 40 lacs	low 15 lacs
Capitalized @ 9.5% P.A.	@ 9.5%.
421.05	157.89.

NPV - Curr. 263.16 - 320 = -56.84.

high 421.05 - 320 = 101.05

low 157.89 - 320 = -162.11

Q5
Optim

$$\begin{aligned} \text{Fvq} &= 101.05 \times [69.5\%] \\ \text{Optim} &+ -162.11 [1 - 69.5\%] \end{aligned}$$

$$= 70.23 - 49.44$$

$$= 20.79$$



$$PV @ Rf. 6.5\% = 2079 / 1.065 = 19.52$$

$$PV @ WACC 9.5\% = 2079 / 1.095 = 18.96$$

(Qu)

OPTION D

(Qb)

Return:

Inv. 320

$$\text{return high} = 101.05 / 320 = 31.58\%$$

$$\text{low} = -162.10 / 320 = -50.66\%$$

Prob up 69.5%

OPTION A

BY INDIGOLEARN



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- Scenario 1 (Low Savings): Savings could decrease to ₹ 15 lakh per year in perpetuity.
- Scenario 2 (High Savings): Savings could increase to ₹ 40 lakh per year in perpetuity.

The company's Weighted Average Cost of Capital (WACC) is 9.5% and the current risk-free rate of return, based on 10-year government bonds, is 6.5%.

From the information given above, choose the correct answer to the Questions No. 4 to 6:

4. New-Chem can invest ₹ 3.20 crore in solar plants today or wait one year, when savings will be ₹ 40 lakh or ₹ 15 lakh perpetuity (WACC 9.5%, risk-free 6.5%). Using risk-neutral probability (69.5% high), Compute PV of option to wait one year, discounted at risk-free rate and WACC (in ₹ lakh).

- (A) PV at RF rate: ₹ 70.23 Lakh; WACC: ₹ 68.50 Lakh
(B) PV at RF rate: ₹ 68.50 Lakh; WACC: ₹ 70.23 Lakh
(C) PV at RF rate: ₹ 44.15 Lakh; WACC: ₹ 42.30 Lakh
(D) PV at RF rate: ₹ 19.53 Lakh; WACC: ₹ 18.98 Lakh

5. NewChem Ltd. (Telangana) plans to invest ₹ 3.20 crore today in a solar power plant generating annual electricity savings of ₹ 25 lakh in perpetuity. The WACC is 9.5%. After one year, savings may change to ₹ 40 lakh (high scenario) or ₹ 15 lakh (low scenario) perpetuity due to tariff revisions. Calculate NPV if invested today and NPV after one year in both scenarios (in ₹ crore).

- (A) Today: -0.45; High: 1.01; Low: -1.62
(B) Today: -0.57; High: 1.21; Low: -1.42
(C) Today: -0.57; High: 1.01; Low: -1.62
(D) Today: -0.63; High: 0.95; Low: -1.58

6.

Case

XYZ

corpora

freshly

selection

Following

related to

You are

correct o

7. R L

grow

other

cash,

throu

Such

(A)

(C)

6. For NewChem's ₹ 3.20 crore solar plant (WACC 9.5%), after one year savings will be ₹ 40 lakh or ₹ 15 lakh perpetuity. Risk-free rate is 6.5%. Using risk-neutral valuation, compute returns in both scenarios and risk-neutral probability of high savings scenario (%).

(A) High: 31.56%; Low: -50.63%; Prob: 69.5%

(B) High: 28.45%; Low: -48.25%; Prob: 65.2%

(C) High: 31.56%; Low: -50.63%; Prob: 73.8%

(D) High: 35.20%; Low: -52.15%; Prob: 69.5%

$$3.20 \rightarrow \begin{cases} 4.210 + 1.012 \\ 1.578 - 1.62 \end{cases}$$

$$3.20 = \frac{4.210p + (1-p)1.578}{(1+0.065)}$$

Case Scenario – III

XYZ Ltd. is professionally engaged in providing consultancy services related to corporate mergers and acquisitions. It is on an expansion mode and decided to hire freshly qualified Chartered Accountants for the post of "M&A Consultant". For selection of the candidate, each of the candidates needs to pass a written test. Following are some of the questions asked in the test to identify the concepts related to M&A.

You are an examinee in written test paper therefore, you are required to choose the correct option to the Question Nos. 7 to 9 :

7. R Ltd. is a parent company and J Ltd. is its subsidiary company. J Ltd. is growing at a faster pace than R Ltd. and also carries higher valuations than other businesses owned by R Ltd. To unlock the value of J Ltd., and generate cash, a strategic avenue which R Ltd. may take is to make J Ltd. go public through an IPO but keep a controlling stake in the newly traded subsidiary. Such tactic adopted by R Ltd. is called _____

(A) Split-up

(C) Sell-Off

(B) Carve Out

(D) Spin-Off

(6)

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8. AB Ltd., the acquiring company may issue substantial amount of convertible debentures to its existing shareholders to be converted at a future date when it faces a takeover threat. The tactic used by AB Ltd. is called _____. 2

(A) White Knight (B) Poison Put
(C) Poison Pill (D) White Squire

9. Identify the correct meaning from among the following options when X Ltd, a target company adopts "Greenmail" tactics to defend itself from hostile takeover. 2

(A) When X Ltd. issues bonds that encourage the holder to cash in at higher prices.

(B) When X Ltd. offers hefty compensations to its managers if they get ousted due to takeover.

(C) When X Ltd. makes a counter bid for the acquirer company.

(D) When X Ltd. offers the acquirer a higher price for its shares than the market price.

Case Scenario – IV

Mr. X a portfolio Manager invests ₹ 25,00,000 in stock Alpha and Beta in ratio of 60 : 40. The daily standard deviation of stock Alpha is 1.20% and stock Beta is 0.90%. The correlation between Alpha and Beta is 0.6. Mr. X wanted to measure VAR for confidence level 99% and 90% level. (Z score: 99% confidence level : 2.33 and 90% confidence level : 1.28) Assume 252 trading days in a year and mean return is zero.

○
$$VAR = \{ 15,00,000 \times 1.2\% \}$$
$$\times 2.33 \times \sqrt{252}$$
$$= 41,940 = 6,165,776$$
$$9000 \times 2.33 \times \sqrt{252}$$
$$= 3,191,888$$

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From the information given above, choose the correct answer to the Question Nos. 10 to 12 :

10. If the correlation between Stock Alpha and Stock Beta increases from 0.60 to 0.80, what will be the impact on the portfolio's annual Value at Risk (VaR) at the 99% confidence level ?

2

- (A) VaR increase by ₹ 48,085 (B) VaR decrease by ₹ 48,085
(C) VaR increase by ₹ 3,029 (D) VaR decrease ₹ 3,029

11. What is the approximate annual Value at Risk (VaR) of the portfolio in rupee terms at the given 99% confidence level ?

2

- (A) ₹ 57,027 (B) ₹ 5,43,162
(C) ₹ 9,05,271 (D) ₹ 7,94,080

12. What is the approximate diversification benefit (per day) of the portfolio while you calculate amount of VaR at 90% confidence level ?

2

- (A) ₹ 11,540 (B) ₹ 23,060
(C) ₹ 34,580 (D) ₹ 3,252

\$ 2,00,000

Case Scenario - V

Green Agro Exports Ltd. entered a 3-month forward contract on January 1, 2026 to buy USD 2,00,000 (import payment due April 1, 2026). Buy \$.

USD-INR Bank Quotes :

Date	Spot Bid	Spot Ask	1M Fwd Bid	1M Fwd Ask	2M Fwd Bid	2M Fwd Ask	3M Fwd Bid	3M Fwd Ask
01.01.2026	83.20	83.55	-	-	-	-	83.60	84.00
01.02.2026	83.80	84.15	-	-	83.95	84.35	-	-
01.03.2026	83.40	83.75	83.70	84.05	84.10	84.45	-	-
01.04.2026	84.20	84.50	84.30	84.65	-	-	-	-

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Q 10

$$\sigma_p^2 = (w_1\sigma_1)^2 + (w_2\sigma_2)^2 + 2w_1w_2\sigma_1\sigma_2\rho$$

$$\sigma_p^2 = (0.6 \times 1.2)^2 + (0.4 \times 0.9)^2 + 2 \times 0.6 \times 0.4 \times 1.2 \times 0.9 \times 0.6$$

$\rho = 0.6$

$$\sigma_p^2 = 0.95904$$

$$\sigma_p = 0.979306\%$$

$\rho = 0.8$

$$\sigma_p^2 = (0.6 \times 1.2)^2 + (0.4 \times 0.9)^2 + 2 \times 0.6 \times 0.4 \times 1.2 \times 0.9 \times 0.8$$

$$\sigma_p^2 = 1.06272$$

$$\sigma_p = 1.03088\%$$

VAR Annual

$\rho = 0.6$

$\rho = 0.8$

$$VAR = \sigma_p \times P.V \times 2.33$$

$$\times \sqrt{252}$$

$$1.03088\% \times 25149$$

$$= 0.979306\% \times 25149$$

$$\times 2.33 \times 15.87$$

$$\times 2.33 \times 15.87$$

$$= 905554 \quad \text{Q.11 optm} = 953247$$



$$\text{Diff} = 953247 - 905554 = 47692.96$$

Q. 10. $\rightarrow$ OPTIONAL. VAR inc by 47692.96
48085

Q12

Diversification Benefit per day.

$$\sigma_A = 1.2\% \times 25 \text{ days} \times 60\%$$

$$= 18000$$

$$\text{VAR} = 18000 \times 1.28 = 23040 \quad (1)$$

$$\sigma_B = 0.9\% \times 25 \text{ days} \times 40\%$$

$$\sigma_B = 9000$$

$$\text{VAR} = 9000 \times 1.28 = 11520 \quad (2)$$

$$\sigma_{AB} = 90\% \text{ diff corr} = 0.6$$

$$\sigma_{AB} = 0.979306\% \times 25 \text{ days}$$

$$\sigma_p = 24482.65$$

$$\text{VAR}_p = 24482.65 \times \sqrt{1} \times 1.28 \quad (3) - [(1) + (2)]$$

$$\text{VAR} = 31337.79 \quad (3)$$



Diversification Benefit

$$= 31337.79$$

$$- 11520 - 23040 = \underline{\underline{3222.21}}$$

Q 12 OPTION D

Q 13

NTM

is not

found.

3 M Fwd 1/1/20

1/2/20 2M Fwd Bid

LOSS 0.05

$$\times 200000 = -100000$$

1/3/20 3M Fwd Bid 83.70 vs 84.00

- 0.30

$$\times 200000$$

$$= -60000$$

Since already

NTM @ 83.95

should it not be

$$83.95 - 83.70 = 0.25$$

no matching
option

1/4/20

SPOT bid 84.20 vs 84.

+ 0.20

$\times 200000$

$$= 40000$$

OPTION A



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From the information given above, choose the correct answer to the Questions No. 13 to 15 :

13. Green Agro Exports Ltd. cancels the import and closes the USD 2,00,000 forward contract (Jan 1, 2026; 84.00 Ask). What are the mark-to-market gain/(loss) on the following dates ? 2

- (A) Feb 1: - ₹ 10,000; Mar 1: - ₹ 60,000; Apr 1: + ₹ 40,000
(B) Feb 1: + ₹ 10,000; Mar 1: + ₹ 60,000; Apr 1: - ₹ 40,000
(C) Feb 1: - ₹ 30,000; Mar 1: - ₹ 60,000; Apr 1: + ₹ 40,000
(D) Feb 1: - ₹ 10,000; Mar 1: - ₹ 30,000; Apr 1: + ₹ 20,000

14. Green Agro Exports Ltd. entered 3-month USD 2,00,000 forward on Jan 1, 2026. On March 1, 2026, what is maturity settlement cost vs. net extra cost of closing original and rebooking 1-month forward ? 2

- (A) Maturity ₹ 1,68,00,000; Extra ₹ 60,000
(B) Maturity ₹ 1,68,00,000; Extra ₹ 10,000
(C) Maturity ₹ 1,68,00,000; Extra ₹ 70,000
(D) Maturity ₹ 1,67,20,000; Extra ₹ 70,000

Comm na as
per India
Contract

15. If import obligation is settled early on March 1, 2026, what total cash outflow is required that day to close forward contract and make import payment ? 2

- (A) ₹ 16,740,000
(B) ₹ 16,810,000
(C) ₹ 16,870,000
(D) ₹ 16,890,000

Comm per
US contract

??

○

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Q14

Org contract. 1/1/20 3M fwd. 84.00
for 21M USD.

Org. Nat. Settlement cost.

$$= 21M \times 84 = 1,764,000,000$$

Net extra cost of closing Org & rebuy
fwd.

new 1 Month fwd. on 1/3/20 84.05

add'l cost of fwd = $84.05 - 84$

$$= 0.05$$

$\times 21M$

$$= 1,050,000$$

Interpretation 2

$$84.05 - 83.70$$

$$= 0.35 \times 200,000$$

$$= 70,000$$

Minimal loss

$$70,000 - 60,000 = 10,000$$

loss

Cost of cancellation +

& Cancel

Org (Buy) 3M fwd 84

Sell 1M fwd 83.70

Left loss 0.30

$$1050 = 0.30 \times 21M = 6,300,000$$

$$\text{Total loss } 60,000 + 10,000 = 70,000$$

Option C



Interpretation 3

Mat Settlement cost $1,68,00,000$

After Carol's rebought cost $84.05 \times 200000 = 1,68,10,000$

Diff 10,000

closing org p. rebu $(84.05 - 83.70) \times 200000$
 $= 70000$

Diff between the 2 $60,000$



(15)

Early Settlement.

Swap + int.

Fwd

Spot

Swap
on 1/3/26.

Buy

Sell

✓

✓

Bank: Buy spot
from mkt & give
to computer

83.75

Buy spot

83.75

Sell fwd

83.70

diff

- 0.05

Bank: Sell 1M

Fwd to meet 83.70
orig B/B.

x 2/18

= - 10,000

Settlement on 1/3/26.

orig contract sell 2/18 USD @

84 to computer

OPTION B

add loss

1,68,00,000

10,000

1,68,10,000



(9)

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PART – II

70 Marks

(Descriptive Portion)

(Candidates are required to give descriptive answers for this part inside the answer book)

- Question paper*
1. *Question paper* comprises 6 questions. Answer Question No. 1 which is compulsory and any 4 out of the remaining 5 questions.
 2. *Working notes* should form part of the answer.
 3. Answers to the questions are to be given only in English except in the case of candidates who have opted for Hindi Medium. If a candidate has not opted for Hindi Medium, his/her answers in Hindi will not be evaluated.
 4. Candidates are required to write the question number legibly.

1. (a) Bharat Infrastructure Ltd (BIL), a premier Indian Engineering firm, has been invited to establish and operate a high-speed data center infrastructure in the Republic of Valoria. The initial investment required for the project is 4,000 million Valors (VL). 6

Under the agreement, BIL will sell the project back to the Valorian government after 4 years for a guaranteed sale price of 8,000 million VL.

During the four-year operational period, BIL will provide technical maintenance and security protocols at an annual fee of 80 million VL, payable at the end of each year.

To hedge the foreign exchange risk associated with the initial capital investment, BIL's investment bankers have proposed a Currency Swap arrangement with the following terms :

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- BIL will swap the principal amount of 4,000 million VL for Indian Rupees immediately (Year 0) at today's spot rate.
- The swap will be reversed at Year 4, with both parties re-exchanging the same principal amounts at the same spot rate locked in at inception.
- The bank will charge an annual facilitation fee of 0.30% (calculated on the ₹ principal amount), payable at the end of each year.

The currency swap covers only the initial investment and terminal principal. BIL's policy is to hedge all other foreign currency cash flows using forward contracts at the respective forward rates prevailing in the market today.

Financial Data :

The current market data and exchange rates (VL/₹) are as follows :

Period	Spot	1 Year Forward	2 Year Forward	3 Year Forward	4 Year Forward
Exchange Rate (VL/₹)	50.00	53.00	56.18	59.55	63.12
PV Factor @ 14%	1.000	0.877	0.769	0.675	0.592

Cumulative PVFA for 4 years at 14%. = 2.913

Assume a risk-adjusted discount rate of 14% per annum. Ignore taxation.

You are required to evaluate the project's financial viability using the Net Present Value (NPV) method, with all cash flows expressed in Indian Rupees (₹ million).

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BIL.

Initial Outflow. 4000 Mn val.

$$VL/RS. = 50$$

$$\text{Total OF} = 4000/50 = 80 \text{ Mn INR.}$$

Yr.	0	1	2	3	4.
C.O.F	-80.				
		80/53	80/56.18	80/59.55	80/63.12.
C.I.F.					+80 + 4000/63.12.
Fees		0.3% x 80	0.3% x 80	0.3% x 80	0.3% 80

Yr.	0	1	2	3	4
COF	-80				
C.I.F.		1.509	1.424	1.343	1.267.
T.intn.					143.371.
fees		-0.24	-0.24	-0.24	-0.24.
NCIF	-80	1.269	1.184	1.103	144.40



Prf: 1 0.877 0.769 0.675 0.592

PrCF: -80 1.113 0.910 0.745 85.484

NPV: 8.252

NPV +ve hence go ahead with project.

1(b)

$D_0 = 40$

5y. 15% → linear deceler.

Cap = 850. $k_e = 13\%$

P.O 25 R.75

y0. ROE = 20%. $R-R = 25\%$

$g = D \times r = 20\% \times 75\% = 15\%$

y b. 12% & 50% = 6%

y 0 1 2 3 4 5 6.

D 40

g. 15% 13.5 12 10.5 9 7.5 6%

15 13.2 11.4 9.6 7.8 6



H model formula:

g_S - Supernormal
 g_n - normal.

$$\frac{D_0(1+g_n)}{k_e - g_n} + \frac{D_0 \times H \times (g_S - g_n)}{k_e - g_n}$$

$$\frac{40(1+6\%)}{13\% - 6\%} + 40 \times \frac{5}{2} \times \frac{(15\% - 6\%)}{13\% - 6\%}$$

$$= \frac{42.4}{0.07} + \frac{100 \times 0.09}{0.07}$$

$$= 13,734.28 \rightarrow 14$$

Over valued as CMP is 850

$$7. \text{ Or else} = \frac{850}{13,734.28} \times 100 = 15.78\%$$



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- (b) XYZ Ltd. recently paid a dividend of ₹ 40. The company is entering a 5-year transition phase where its current 15% growth rate will decline linearly to a stable perpetual rate.

Financial Parameters :

- Transition Period: 5 years (declining linearly from Year 1).
- Current Data: ROE of 20% and a retention ratio of 25%. $g = 20 \times 25 = 5\%$
- Terminal Data (Year 6+): ROE of 12% and a retention ratio of 50%.
- Market Data: Required return of 13% and Market Price of ₹ 850.

You are required to :

- Estimate the intrinsic value per share using the H-Model.
- Given the current market price of ₹ 850 per share, assess whether the stock is undervalued or overvalued and calculate the percentage deviation from intrinsic value.

- (c) MT Ltd. has approached you for an additional loan of ₹ 20 crores to fund its aggressive expansion plans. The company's current sustainable growth rate is 10%, but it aims to grow at 16% annually. Its debt-to-equity ratio is already at the maximum permissible limit of 2.5:1. Additionally, the industry is experiencing 5% inflation, which is increasing the company's asset financing requirements.

As a credit analyst, you explain the key concerns regarding this loan request and suggest two alternative courses of action available to the company to achieve its growth objectives sustainably.

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①

$$S\&R = 10\% \quad g = 6\%$$

$$g_{ask} = 16\%$$

$$D:E = 2.5:1$$

$$i_{n+1} = 5\%$$

(1) Key concerns:

(1) In high inflation

if $D:E$ remains based on historical cost growth will be compromised

unless debt is added or E_g is added.

(2) Already high debt. risk for co.

(3) Int. exp. high w/c.

ways to counter

(1) Raise equity.

(2) w/c from banks based on op. exp.

(3) Move $D:E$ to risk limited ratios

(4) reduce w/c segments by inc. payables.

(5) Inc. Margin



(12)

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2. (a) Mr RJ own two securities X and Y are priced according to a two-factor Arbitrage Pricing Model. The factor sensitivities and expected returns are as follows :

Particulars	Security X	Security Y
Beta with factor 1 (β_1)	1.2	0.8
Beta with factor 2 (β_2)	0.5	1.4
Expected (actual) return	14%	16%

Additional Information :

Risk-free rate = 6%,

Risk premium for Factor 1 = 4%,

Risk premium for Factor 2 = 5%.

Required :

- (i) Evaluate whether Security X and Security Y are correctly priced under the two-factor Arbitrage Pricing Theory Model.
- (ii) Mr RJ has ₹ 1,00,000 available and intends to construct a long-short portfolio by taking a long position in Security A and a short position in Security B. You are required to analyse and determine the amount to be invested in Security A and the amount to be sold short in Security B if the desired portfolio sensitivities are 1.40 with respect to Factor 1 and 0.05 with respect to Factor 2.

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2(a)

$$E(R) = R_f + \beta_1 \lambda_1 + \beta_2 \lambda_2$$

$$x = 6\% + 1.2 \times (4\%) + 0.5 \times (5\%)$$

$$= 6\% + 4.8\% + 2.5\%$$

$$ER_x = 13.3\%$$

AR 14%

underrated
Buy

y

$$= 6\% + 0.8 \times (4\%) + 1.4 \times (5\%)$$

$$= 6\% + 3.2\% + 7\%$$

$$ER_y = 16.2\%$$

AR 16

overpriced
sell

(ii)

Buy x & sell y.

Portfolio

$$\beta_1 = 1.4$$

 w_x

$$\beta_2 = 0.05$$

 w_y

$$w_x \times 1.2 + w_y \times 0.8 = 1.4$$

$$w_x \times 0.5 + w_y \times 1.4 = 0.05$$



$$1.2x + 0.8y = 1.4 \quad \times 0.5$$

$$0.5x + 1.4y = 0.05 \quad \times 1.2$$

$$0.6x + 0.4y = 0.7$$

$$0.6x + 1.68y = 0.06$$

$$\begin{array}{r} \text{C-)} \quad \text{C-)} \quad \text{C-)} \\ \hline \end{array}$$

$$-1.28y = 0.64$$

$$y = \frac{0.64}{-1.28}$$

$$y = -0.5$$

$$0.6x + 0.4x - 0.5 = 0.7$$

$$0.6x - 0.2 = 0.7$$

$$0.6x = 0.9$$

$$x = 0.9 / 0.6 = 1.5$$

$$w_x = 1.5 = \text{Rs. } 1.5 \text{ lag / -}$$

$$w_y = -0.5 = \text{Rs. } -50,000 / -$$



(13)

AZK

- (b) On 1 July, ALPS Company shares trade at ₹ 2,000. An investor enters the following option: (3-month maturity) : 4

Option	Type	Strike (₹)	Premium (₹)
A	Call	1920	130
B	Call	2000	85
C	Call	2080	45
D	Put	1920	40
E	Put	2000	95
F	Put	2080	155

Contract size = 100 shares.

Risk-free rate = 6% p.a. (continuous compounding not required) and the stock does not pay dividends.

Ignore transaction costs. Assume that investor chosen any one option.)

Required :

- Assess the ITM, ATM, OTM of each option A to option F at initiation and evaluate the intrinsic and time value components embedded in the premiums.
- In the next 3 months expiry price may increase by 150 or may decrease 150. Under each expiry scenario, examine which options will be rationally exercised and appraise the net profit or loss per contract.

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Option	Type	Strike	Premium	Initial p.m.	Monitors
A	C	1920	130	2000	ITM
B	C	2000	85	2000	ATM
C	C	2080	45	2000	OTM
D	P	1920	40	2000	OTM
E	P	2000	95	2000	ATM
F	P	2080	155	2000	ITM

	OV	IV	TV
A	130	80	50
B	85	0	85
C	45	0	45
D	40	0	40
E	95	0	95
F	155	80	75



214.

S	K	Pr.fact.	Prk	OV'	IV'	TV'
		ie 1.5% Disct.				
2000	1920	0.9852	1891	130	109	21
2000	2000	0.9852	1970.4	85	29.6	55.4
2000	2080	0.9852	2049.2	45	—	45
2000	1920	0.9852	1891	40	—	40
2000	2000	0.9852	1970.4	95	—	95
2000	2080	0.9852	2049.2	155	49.2	105.8

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		NP	K _r	Externe.	Profit	Accr. NP	
C	A	2150	1920	Y	230	130	100 10000
C	B	2150	2000	Y	150	85	65 6500
C	C	2150	2080	Y	70	45	25 2500
P	D	2150	1920	N	40	-40	-4000
P	E	2150	2000	N	95	-95	-9500
P	F	2150	2080	N	155	-155	-15500

		(NP)	K _r	(Ex.)	Profit	Accr. NP	Total
C	A	1850	1920	N	0	-130	-13000
C	B	1850	2000	N	0	-85	-8500
C	C	1850	2080	N	0	-45	-4500
P	D	1850	1920	Y	130	90	9000
P	E	1850	2000	Y	150	55	5500
P	F	1850	2080	Y	230	75	7500



(14)

AZK

(c) The technology start-up, Fincorp Pvt. Ltd., is in its early growth stage and is evaluating multiple sources of financing including Angel Investment, Venture Capital (VC), Convertible Notes, SAFE and IPO.

Evaluate the following statements and state whether they are True or False, giving brief justification in each case :

(i) In early-stage start-ups, valuation is primarily based on discounted cash flow (DCF) using stable historical earnings. *False*

True (ii) Venture capital financing typically involves staged funding to reduce agency problems and mitigate investment risk. *True*

True (iii) Bootstrapping reduces dilution risk but may limit growth due to capital constraints. *True*

False (iv) Angel investors generally invest at a later stage than venture capitalists and demand stronger control rights. *False*

3. (a) An Indian company is investing in a 2-year project in Europe (EURO).

Initial Investment = €4,000,000

Annual after-tax operating cash flow = €2,500,000

Life = 2 years

Unlevered cost of capital = 12%

Spot rate = ₹ 90/€

Corporate tax rate (India) = 30% ✓

Financing Options (50% Debt Required)

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(15)

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Option	Borrowing Currency	Interest Rate (p.a.)
A	India (INR)	9%
B	Euro (EUR)	5%
C	USA (USD)	3%

Additional Data :

Spot USD/INR = ₹ 75

Spot EUR/USD = 1.20

Interest rate in USA = 3% p.a.

Interest rate in Europe = 5% p.a.

Assume : Interest Rate Parity (IRP) holds and No transaction cost

Required :

- (i) Identify which option is the cheapest and why ?
- (ii) Compute Adjusted Present Value (APV) under cheapest option.

Present Value Factor :	1 st Year	2 nd Year
12%	0.893	0.797
5%	0.952	0.907

(b) A mutual fund offers two plans : Dividend Plan and Bonus Plan. An investor invests ₹ 12,00,000 on 1 April, 2025 in the ratio 60:40 respectively. Initial NAV of both plans is ₹ 48.

Entry load is 2% and exit load is 1% (on redemption value).

Under the Dividend Plan, a dividend of ₹ 5 per unit is declared on 30 September, 2025 when NAV is ₹ 56. After declaration, NAV becomes ₹ 51. The dividend is reinvested at ₹ 51. (Closing NAV on 31 March, 2026 is ₹ 54.)

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Me

<u>3(a)</u>		₹	$\frac{\text{INR}}{\text{EUR}}$	INR/₹
1.	100	4000	90	360

$$\Delta \text{CIF} = 2.5 \text{ INR}$$

Spot

$$\text{PVIFA}(12\%, 2\text{yrs}) = 1.690$$

$$0.893, 0.797$$

$$12\% \text{ PVIF} \quad (1) \quad (2)$$

	USD INR	EUR USD	EUR INR
Spot	75	1.2	90
Base	USD	EUR	EUR
~~Int rate~~ prime	INR	USD	INR
Int Rate	3%	5%	5%
Int prime	9%	3%	9%

Forward rates

$$1\text{y.} \quad 75 \times \frac{1.09}{1.03} \quad 1.2 \times \frac{1.03}{1.05} \quad 90 \times \frac{1.09}{1.05}$$

$$2\text{y.} \quad 75 \times \frac{1.09^2}{1.03^2} \quad 1.2 \times \frac{1.03^2}{1.05^2} \quad 90 \times \frac{1.09^2}{1.05^2}$$



Forex USD/INR EUR/USD EUR/INR.

1 79.389 1.177 93.429

2 83.992 1.154 96.988

Booring in EUR.

Annul int @ 5% on 500k of USD £
= 100000 Euro / year.

Interest option

INR - 9%

EUR - 5% Same as EUR int rate 5%.

USD - 3% Same as USD int rate of 3%.

$75 \times 1.2 = 90$ No arbitrage opportunity

All int. rates adjusted for time will be equal there is no
cheapest one.

APR = Base value + ^{for benefit} PV of int + Prgschule
at initial cost of cap.

=



Base rate: EUR EUR/INR INR. PFI @ 12%.

100 4M USD 90 - 360M USD 0

CIF yr 1 2.5M USD 93.43 233.575 0.893

yr 2 2.5M USD 96.99 242.475 0.797

$$-360 + 208.58 + 193.25 = 41.83 \text{ M USD INR.}$$

for shield. amt.

4M USD @ 1.2 USD/EUR

=> Project cost in USD = 4.8M USD

50% debt @ 2.4M USD

Equity 2.4M USD

Fin @ 3% 79.37 83.99 USD Endgmt.

$$\text{Outflow (1)} 2.4 \text{ M USD} \times 3\% \times 79.37 = 5.714 \text{ M USD}$$

$$(2) 2.4 \text{ M USD} \times 3\% \times 83.99 = 6.04728 \text{ M USD}$$

$$\text{Pr. } 5.714 \times 0.971 + 6.047 = 11.250$$

$$= 5.548 + 5.702 = 11.250$$

$$\text{for shield} = 11.250 \times 30\% = 3.375 \text{ M USD INR.}$$



$$\text{Total APV} = 3.375 + 41.8$$

$$= 45.205 \text{ Mio INR.}$$

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(15)

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Option	Borrowing Currency	Interest Rate (p.a.)
A	India (INR)	9%
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Additional Data :

Spot USD/INR = ₹ 75

Spot EUR/USD = 1.20

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(6)

DIVID

Bong.

INV 7.2 lag.

4.8 lag.

NAV 48

48

Entry in 2%

2%

prev NAV $48 \times 1.02 = 48.96$

48.96

units
added

$$\frac{7,29,000}{48.96} = 14705.88$$

$$\frac{4,80,000}{48.96}$$

DIV @ 18.5/unit

Total div 14705.88×5

$$= 73529.40$$

9803.92 units

rem @ NAV 51

$$\frac{73529.40}{51}$$

$$= 1441.75 \text{ units}$$

Rem 1: 18.5

$$\text{Bursals} = \frac{9803.92}{4}$$

$$= 2450.98$$

$$\text{servans} = 14705.88 + 1441.75$$

$$= 16147.63 \text{ units}$$

$$\text{Total units} = 9803.92$$

$$+ 2450.98$$

$$= 12254.90 \text{ units}$$

closing NAV 54

Chug NAV 52

Chug val 54×16147.63

$$= 871972$$

closing val 52×12254.90

$$= 637254.8$$

loss 1% exit in 8720

$$= 863252$$

loss 1% exit in 6373

$$= 630882$$



$$\text{Gross} = 863252 - 720000$$

$$= 143252$$

$$\text{HPR} = \frac{143252}{720000} \times 100$$

$$= 19.9\%$$

$$630882 - 4.8\%$$

$$150882$$

$$150882 \times 100$$

$$= 80000$$

$$31.43\%$$

Bond plan has higher return

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(16)

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Under the Bonus Plan, a bonus issue of 1:4 is declared on 30 September, 2025 when NAV is ₹ 60. After bonus adjustment, NAV becomes ₹ 45. Closing NAV on 31 March, 2026 is ₹ 52.)

Ignore taxation.

You are required to :

Evaluate the total return and Holding Period Return under each plan after considering loads and assess which plan provides higher effective return.

(c) "Transfer of NPAs through securitization improves balance sheet health but may involve regulatory and valuation challenges." Comment on the statement above.

(a) A portfolio manager is analysing four equity securities to construct an optimal risky portfolio using Sharpe's Single Index Model. The securities are traded in an efficient market and follow CAPM assumptions.

The following information is available :

Security	Expected Return $E(R_i)$	Beta (β_i)	Residual Variance (σ_{ei}^2)
A	17%	1.4	0.0225
B	15%	1.1	0.0196
C	13%	0.9	0.0144
D	11%	0.6	0.01

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U_i	$E(R_i)$	R_f	$E(R_i) - R_f$	$E(R_i) - R_f / \beta_i$	Portfolios with Risk
A	17%	6%	11%	11/1.4	7.86 (3)
B	15%	6%	9%	9/1.1	8.18 (2)
C	13%	6%	7%	7/0.9	7.78 (4)
D	11%	6%	5%	5/0.6	8.33 (1)

	(1) $R_i - R_f$	(2) β_i	(3) $\sigma_{e_i}^2$	(4) $1 \times 2 / 3$	≤ 4
D	5	0.6	0.01	300	300
B	9	1.1	0.0196	505.102	805.102
A	11	1.4	0.0225	684.44	1489.54
C	7	0.9	0.0144	432.5	1927.04

$$\frac{\beta_i^2}{\sigma_{e_i}^2} \leq 5 \quad \underline{\underline{C_i}}$$

$\sigma_m^2 = 0.04$

D	$0.6^2 / 0.01$	36	36	$0.01 \times 300 / [1 + 0.01 \times 300]$
B	$1.1^2 / 0.0196$	61.73	77.73	$0.01 \times 805.102 / [1 + 0.01 \times 805.102]$
A	$1.4^2 / 0.0225$	82.1	184.84	$0.01 \times 1489.54 / [1 + 0.01 \times 1489.54]$
C	$0.9^2 / 0.0144$	56.25	241.09	$0.01 \times 1927.04 / [1 + 0.01 \times 241.09]$

$$\sigma_m^2 \times \sum_{i=1}^n \frac{(R_i - R_f) \times \beta_i}{\sigma_{e_i}^2} \quad \left/ \quad \left(1 + \sigma_m^2 \sum_{i=1}^n \frac{\beta_i^2}{\sigma_{e_i}^2} \right) \right.$$



	C
~~Auto off~~	
D	4.91
B	6.56
A	7.09
C	7.24

All Sec are below cut off of 7.95

Compare C* with treasury

D & B
are selected

proportion of instns.

$$Z_D = \frac{\beta_i}{\sigma_{e_i}^2} \left[\frac{R_i - R_f}{\beta} - C^* \right]$$

$$Z_D = \frac{0.6}{0.01} (8.33 - 7.95) \quad Z_B = \frac{1.1}{0.0196} \times (8.18 - 7.95)$$

$$= \frac{22.8}{12.90} \quad / \quad 35.70$$

$$\text{Total weight} = 63.86 \quad 36.14$$

$$\text{CAPM} \quad E_R = R_f + \beta(MRP)$$

$$D. \quad 6 + 0.6 \times (14 - 6)$$

$$\text{CAPM} = 6 + 0.6 \times 8 = 10.8\%$$

$$E_R = 17\% \quad \text{undervalued}$$



$$ER_B = 6 + 1.1 \times 8 = 14.8 \quad ER \text{ (15\%)} \text{ underst.$$

(2) Sharpe vs CAPM

→ Systematic risk. Use-Beta.

→ Maximizing risk reward.

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(17)

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Additional information :

Risk-free rate (R_f) = 6%

Market expected return $E(R_m)$ = 14%

Market variance (σ_m^2) = 0.040

Cut-Off Rate (C^*) = 7.95

You are required to :

- (i) Given the cut-off rate, identify the securities to be included in the optimal portfolio.
- (ii) Compute the proportion of investment in each selected security.
- (iii) Using CAPM, compute the expected return and value of each selected security.
- (iv) Why the portfolio constructed using Sharpe's Model is consistent with CAPM assumptions?

(b) Consider the recent performance of the closed ended fund.

Period	NAV (₹)	Premium/Discount %
0	20	0
1	22.5	-5
2	19.5	2.3
3	21	-3.2
4	22.3	4

AZK

u(b)

NAV	Pran/dis	MP	at sch	sch.1.
20 ✓	0	20	-	
22.5 ✓	-5%	21.375	1.375	1.375/20
19.5 ✓	2.3%	19.9485	1.4265	-1.4265 21.375
21	-3.2%	20.328	0.3795	0.3795 19.9485
22	4%	23.192	2.864	2.864 20.328

retu.

0	-
1	6.88% ✓
2	-6.67% ✓
3	1.97% ✓
4	14.09% ✓

$$\begin{aligned}
 \text{Geometric return} &= \left[\frac{(1 + 0.0688)(1 - 0.0667)}{(1 + 0.0197)(1 + 0.1409)} \right]^{1/4} - 1 \\
 &= (1.16)^{1/4} - 1 = 1.03771 - 1
 \end{aligned}$$



$$= 3.77\% \rightarrow$$

⑤ Growth rate within NAV:

$$\left(\frac{22.3}{20} \right)^{1/4} - 1$$

$$= 2.758\%$$

Diff in % of disc & premium to NAV.

⑥ prepaid & correction wave

⑦ Zero cost collar Cap premium = Floor premium.

Premium = Pr of future benefits (Exp benefits)



ER	Cap	pay off	profit/loss	PV	PVCF
7.8	9.5	0			
8.6	9.5	0			
9.2	9.5	0			
10.6	9.5	1.17	10018×1.17	0.84	$\frac{0.924}{0.8}$

Cap option premium = 0.924

Flux pay off = 0.924 cr.

Flux anal at 9.1

~~int~~ int	ten	pay off	profit/loss	PV	PVCF
7.8	9	1.21	1.2 cr	0.96	
8.6	9	0.41	0.4 cr	0.92	
9.2	9	—	—	—	
10.4	9	—	—	—	

7.8	8.6	0.81	0.8 cr	0.96	0.768 cr
8.6	8.6	—	—	—	—
9.2	8.6	—	—	—	—
10.4	8.6	—	—	—	—



7.8	8.8	1	1.8	0.96	0.96
8.6	8.8	0.2	0.28	0.92	0.184
9.2	8.8	0			
10.6	8.8	0			

1.144

7.8	8.7	0.9	0.98	0.96	0.864
8.6	8.7	0.1	0.18	0.92	0.092
9.2	8.7	-			
10.6	8.7	-			

0.956

7.8	8.65	0.85	0.858	0.96	0.816
8.6	8.65	0.05	0.058	0.92	0.046
9.2	8.65	-			
10.2	8.65	-			

0.862

8.65 -

0.862

8.7 -

0.956

→ forget 0.924

0.05

0.094

0.956 - 0.924 = 0.032



$$8.7 - \left[\frac{0.05}{0.094} \times 0.032 \right]$$

$$8.7 - [0.017]$$

$$= 8.683\%$$



(18)

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Required :

- (i) Evaluate the average return per period (based on Geometric mean) for an investor who bought 1000 shares of the closed fund at the invitation and then sold her position at the end of the period 4.
- (ii) Geometric growth rate in NAV over the same period and interpret the results.
- (c) Explain the Elliot Wave Theory of Technical Analysis.

OR

- (c) ABC Ltd. has a ₹ 100 Crores floating-rate loan, reset annually for 4 years.

It enters into a collar strategy to hedge against interest rate risk.

Cap Rate = 9.5%

Expected Interest rates & Discounting Factors :

Year	Expected Rate	Discounting Factor
1	7.8%	0.96
2	8.6%	0.92
3	9.2%	0.88
4	10.6%	0.84

You are required to identify a Floor Rate that makes the collar a zero cost collar. (Ignore Volatility)

AZK

5. (a) A "momentum-driven" investment consultant is pitching Lumina Cloud Systems (LCS) to your client. The consultant claims LCS is a bargain because its Cash Flow from Operations (CFO), when capitalized at the prime lending rate of 9%, yields a value of ₹ 425 per share. LCS currently trades at ₹ 240 per share.

You are required to perform a Two-Stage FCFE Valuation to verify these claims.

Financial Data & Assumptions:

- Net Income (Base Year): ₹ 180 Crores.
- High-Growth Stage (Years 1–2): Net Income will grow by 25% annually.
- Net Investment in Operating Assets: This is projected to be ₹ 240 Crores in Year 1 and ₹ 280 Crores in Year 2. (Note: This represents capital expenditure less depreciation plus the increase in working capital).
- Debt Policy: The Company finances 30% of its net investment in operating assets through new debt.
- Cost of Equity: The risk-free rate is 6%, the company's Beta is 1.20 and the Equity Risk Premium (ERP) is 5%.
- Stable Stage (Year 3 onwards): Net investment in operating assets will drop to 20% of Net Income each year.

$$\Sigma R = R_f + \beta (MRP)$$

$$ERP = R_f$$

$$not MRP' = ERD$$

$$= \beta (MRP)$$

5(a)

$$\frac{CF_0}{9\%} = 425 \text{ shareholder}$$

$$\frac{CF_0}{\text{share}} = 425 \times 9\%$$

$$CF_0 / \text{share} = 38.25$$

$$CF_0 / 6000 = 38.25 \quad CF_0 = 38.25 \times 6000 = 229500$$

(1)

y₀y₁y₂y₃

Netm

180

180(1.25)

(180 × 1.25²)

281.25 × (1+g)

180

225

281.25

Op out

-

-240

-280

-20%N

add Debt

+72

+84

+30%g + 20%gN

R_f = 6

FCFE

57

85.25

B = 1.2

0.9009 0.8116

$$B(R_M - R_f) = 5\%$$

$$1.2(R_M - 5\%) = 5\%$$

$$FCFE = 120.542$$

$$R_M = \frac{5}{1.2} + 6$$

$$R_M = 10.1667$$

$$(E_R - R_f) = 5\%$$



$$ER - 6\% = 5\%$$

$$ER = 11\%$$

(2)

$$\text{FCFE value} = \frac{240 \times (60)}{11\% - 6\%} = 14400 = \text{Stage 1} + \text{Stage 2}$$

$$n = 14400 - 120547$$

$$n = 14279.458$$

$$n = \left(\frac{CF_0}{k_e - g} \right) = \left(\frac{CF_0}{11\% - 6\%} \right) \times 0.8116 = 14279$$

$$\frac{CF_0}{11\% - 6\%} = \frac{14279}{0.8116}$$

$$\frac{CF_0}{11\% - 6\%} = 17593$$

$$\frac{(281.25)(1+g)}{11\% - 6\%} + 141 \cdot (281.25)(1+g) = 17593$$



$$86\% \times 281.25 \times (1+g) = 1935.57$$

$$- 1759.99$$

$$30.9375 (1+g)$$

$$= 1935.57 - 1759.99$$

$$30.9375 + 30.9375g$$

$$= 1935.57 - 1759.99$$

$$1759.99 + 309.375g = 1935.57 - 30.9375$$

$$17902.375g = 1904.6325$$

$$g = 1904.6325 / 17902.375$$

$$g = 10.638\%$$



(20)

AZK

- Outstanding Shares: 60 Crores.
- Present Value Factor :

	1 st Year	2 nd Year	3 rd Year
	0.893	0.797	0.7118

12%

Requirements :

- Calculate the total Present Value of the FCFE for the high-growth period (Stage 1).
 - If the current market price of ₹ 240.00 is considered "fair" by the market, calculate the implied sustainable growth rate for the terminal stage (Year 3 onwards).
- (b) Zenith Commercial Bank's ALCO is evaluating the re-pricing risk for the 0-90 days time bucket. The following quarterly data is available :

Financial Data :

- Rate Sensitive Assets (RSAs) : ₹ 12,500 Crores
- Rate Sensitive Liabilities (RSLs) : ₹ 15,800 Crores
- Quarterly Net Interest Income (NII) : ₹ 450 Crores

Risk Policy :

The bank's Earnings at Risk (EaR) limit is 8% of quarterly NII. Hedging is mandatory if the potential NII impact in any scenario exceeds this threshold.

5(b)

$$\text{GAP} = \text{RSA} - \text{RSL}$$

$$= 12500 - 15800 = -3300 \rightarrow \text{neg.}$$

Favable	Rate inc $\rightarrow$	NII	-ve impact
	Rate dec $\rightarrow$	NII	+ve impact
	$\rightarrow$		

$$\text{EAR} = \Delta \text{NII} \text{ Dunto chng in int. rate.}$$

$$= \text{GAP} \times \Delta \text{rate.}$$

$$-3300 \times 50 \text{ bps} \times \frac{90}{360} \rightarrow$$

$$= 41250$$

$$\text{@ 3\% of NII} = \frac{41250}{450} = 0.92\%$$

$$450 \times 8\% = 3600 \text{ EAD.}$$

$$-3300 \times 0.25\% \times 0.25$$

$$= 206250$$

$$\frac{206250}{450} = 0.46\%$$

Both are well within limit No hedge req.



(21)

AZK

You are required to :

- (i) Identify the Gap Position (Positive/Negative) and determine which of the following scenarios is favourable for the bank's NII, providing a brief justification :
- Scenario A : Repo rate increase of 50 bps.
 - Scenario B : Repo rate decrease of 25 bps.
- (ii) Calculate the Earnings at Risk (EaR) in ₹ Crores and as a percentage of NII for both scenarios. Based on the bank's risk policy, advise whether management should activate hedging strategies or not.
- (c) Briefly justify why transaction exposure is generally considered more critical than translation exposure from a financial risk management perspective. *translation more foreign sub*
transaction CF - scan
6. (a) Arotech Industries Ltd. (A), a listed engineering major, are evaluating the acquisition of MedGen Labs Pvt. Ltd. (M), an unlisted pharmaceutical laboratory. Financial parameters as of 31 March, 2025 are as follows :

Particulars	<u>Arotech</u> (A) Industries (A)	<u>MedGen Labs</u> (M)
Profit After Tax (PAT)	₹ 6,000 crore	₹ 450 crore
No. of Equity Shares	500 crore	5 crore
P/E Ratio	30x	1.2 × Industry Avg P/E
Market Price / Standalone Fair Value	₹ 360.00	To be determined

AZK

Additional Information :

1. Combined Entity : Post-merger PAT is estimated at ₹ 6,850 crore (including synergies). The expected P/E of the combined entity is 34x.
2. Synergy Value : The total synergy gain (increase in combined entity value over the sum of standalone values) is capped at ₹ 34,000 crore.
3. Settlement Offers (Per 1 share of MedGen) :
 - Offer 1 (Cash) : ₹ 4,000 (Premium of 5.82% over the standalone fair value of MedGen).
 - Offer 2 (Hybrid Equity) : ₹ 1,000 Cash + Arotech shares (X) (Premium of 21.69% over standalone fair value).
 - Offer 3 (Hybrid Debt) : ₹ 1,150 Cash + 5 Convertible Bonds of Arotech (Premium of 25.66% over standalone fair value).
4. Bond Terms (Arotech) : Face Value ₹ 500, 4-year term, 10% discount rate. Each bond converts into 2 Arotech shares or redeems at ₹ 680.24.

You are required to :

- (i) Determine the annual post-merger synergies (PAT basis) and MedGen's standalone P/E ratio.
- (ii) Calculate the Industry Average P/E and MedGen's Standalone Fair Value per share.
- (iii) Solve for the number of Arotech shares (X) offered in Offer 2.
- (iv) Rank all three offers from MedGen's perspective assuming Arotech's share price has fallen to and remains at ₹ 330 at the time of settlement/conversion.

b (a)	Arg Rs. cr.	Tgt. Rs. cr.	Sym comb
PAT	6000	USD	USD 6850
# shs	500 cr	5 cr	
EPS	12	90	
PE	30x	$1.2 \times \text{ind Arg}$	34.
CM p	360	$3780 \times \left(\frac{1890}{5}\right)$	(1)
Marp.	1,80,000	18900	232900 cr.
Symg.			34000.
Medgn & Marp.		$232900 - 34000$	
PE	(3780/90)	$42 \times 180000 = 18900$	
ind Arg		$42/1.2 = 35$	
Option	1	2	3.
cash	4000/shs (1)	1000	1150
IV / SA FV.	3780 $\left(\frac{4000}{1.0582}\right)$		
pmr	5.82-1.		
Shs/Deb		$4600 - 1000$ $(3780 + 21691)$ $= 3600$	$(3780 \times 1.2566 = 4780)$ $4780 - 1150$ $= 3600$
Eg. Deb			$5 \times 500 = 2500$
Eg. Shs canvd.			2 x 100 shs
red.			5×680.24 3401.2



(3)

$$3600 / 360 = 10 \text{ yrs.}$$

(4)

(1) 4000
(2)

$$1000 + 10 \times 330$$

(3)

1150

$$10 \times 330 = 3300$$

4450

4300

2

$$5 \times 680.24$$

$$3401.2$$

$$+ 1150$$

$$4551.2$$

Optra 3 is better

followed by 2 & then (1)

Alt solution

(1) 4000

(2) 4300

$$(3) \quad 1150 + 3401.2 \text{ (PVIF } 10\% \text{ 4 yrs.)}$$

$$1150 + 2323.06 = 3473.06$$

Optra (2) is better followed by (1) & (3)



(23)

AZK

- (b) The current price of F Ltd is ₹ 120 and a European option with an exercise price of ₹ 115 will expire in 50 days. The annual continuously compounded risk free rate of interest is 8%. The standard deviation of annual returns on F Ltd. is 30%. 7

Value of $(d_1) = 0.5375$; Year = 365 days and value of $e^{-rt} = 0.9891$.

Using Black-Scholes Model, you are required to calculate :

- (i) The Hedge Ratio ✓ $(N(d_1))$
- (ii) The probability that price in spot market on expiration would be higher than the exercise price of the call option. $(N(d_2))$
- (iii) Value of call and put options. C/P

Cumulative Area Table extract

	0.00	0.01	0.02	0.03	0.04	0.05
0.4	0.6554	0.6591	0.6628	0.6664	0.6700	0.6736
0.5	0.6915	0.6950	0.6985	0.7019	0.7054	0.7088
0.6	0.7257	0.7291	0.7324	0.7357	0.7389	0.7422

Need
to

AZK

$$\begin{aligned}
 6(b) \quad S_0 &= 120 \\
 K &= 115 \\
 t &= 50 \\
 r &= 8\% \quad (\text{contin comp}) \\
 \sigma &= 30\% \\
 d_1 &= 0.5375
 \end{aligned}$$

$$\text{hedge ratio} = \Delta = N(d_1)$$

$$\begin{aligned}
 N(0.53) &= 0.7019 \\
 N(0.54) &= 0.7054 \\
 &\quad \underline{0.0035}
 \end{aligned}$$

$$\begin{aligned}
 N(0.5375) &= 0.7019 + 0.0035 \times 3/4 \\
 &= 0.7019 + 0.002625
 \end{aligned}$$

$$\text{hedge ratio } N(d_1) = \underline{0.704525}$$

$$(3) \quad C = S_0 \cdot N(d_1) - K \cdot e^{-rt} \cdot N(d_2)$$



$$\begin{aligned}
 d_2 &= d_1 - \sigma \sqrt{T} \\
 &= 0.5375 - 0.3 \times \sqrt{50/365} \\
 &= 0.5375 - 0.3 \times 0.37 \\
 &= 0.5375 - 0.1110 \\
 &= \underline{0.4265}
 \end{aligned}$$

$$N(d_2) = N(0.4265)$$

=

$$N(0.42) = 0.6628$$

$$N(0.43) = 0.6664$$

$$\begin{array}{r} 0.01 \qquad 0.0036 \end{array}$$

$$0.0065 = \frac{0.0036}{0.01} \times 0.0065$$

$$= 0.00234$$

$$N(0.4265) = 0.6628 + 0.00234$$

$$= \underline{0.66514}$$

$$N(d_2) = \text{prob.} = 66.51\%$$



$$C = 120 \times 0.7045 - 115 \times 0.9891 \times 0.6651$$

$$84.54 - 75.65$$

$$C = 8.887$$

$$C_{\text{ap}} + C_{\text{div}} = P + 3h$$

$$K_e + C = P + S_0$$

$$(115 \times 0.9891) + 8.887 = P + 120$$

$$122.63 = P + 120$$

$$P = 122.63 - 120$$

$$P = 2.63$$

