Suggested Solution

Test-3

Case Scenario-I		
(i)	d	15
(ii)	b	350 barrrels
(iii)	C	7,488.18
(iv)	a	7702.68

Hint:

Requirement = 150 tonnes per month (3 tonne = 22 barrels)

SP: ₹7500/barrel

Aug beg. — Aug end

SP: 7500
Aug Fut: 7668

EP: 7800
Req: 150 × 22/3
= 1100 barrels

733.33 barrel
Future Contract

366.67 barrel
No hedging

(i) No. of contract to be booked:

Lot size = 50 barrel

Quantity to be hedged = 733.33 barrel

No. of contract = $\frac{733.33}{50}$ = 14.67 contract
(Rounded to 15 contract.)

Note: It means hedged part = 15 × 50 = 750 barrel

Exposed part = 1100 – 750 = 350 barrel

(ii) Effective price per barrel when SP = 7570 and FP = 7788:

Sale price of future (Exit on Aug end)	7788
Purchase price of Future	7668
Gain per barrel	120
Total gain on 15 contracts [(120 × 50) × 15]	90,000

(b) Outflow to buy 1100 barrels from spot market:

= 7570 × 1100 = 83,27,000

(c) Effective price for whole requirement of Aug:

Outflow in spot market	83,27,000
Less: gain from future contract	(90,000)
Total net cost for 1100 barrels	82,37,000
Effective cost per barrel	7488.18

(iii) (a)

Let, In August spot price be 'r'

Therefore, Future Price = 1.01r

Sale price of future (Exit on Aug end)	1.01r
Purchase price of Future	7668
Loss per barrel	1.01r - 7668
Total Loss on 15 contracts [50× 15]	(1.01r - 7668) ×750

(b) Outflow to buy 1100 barrels from spot market:

= r × 1100 = 1100 r

(c) Effective price for whole requirement of Aug:

Outflow in spot market (1100 × r)	1100r
Add: loss from future contract	(1.01r - 7668) ×750
Total net cost for 1100 barrels	1100 r + (1.01r - 7668) ×750

Effective cost per barrel = current price +2% = 7500+2% =7625

Total Net cost for 1100 barrels = 7625×1100 = 84,15,000

1100 r + (1.01r - 7668) ×750 = 84,15,000

Or, 1100r +757.5r -57,51,000 = 84,15,000

Or, 1857.5 r = 1,41,66,000

Or, r = 7626.38

Future Price = 1.01r = 1.01 ×7626.38 = 7702.64

Case Scenario-II		
(i)	A	8.425
(ii)	B	274.075
(iii)	b	135.87%

1.6.24 — 30.6.24

- 25 L unit @₹10 issued.
- Initial expense 12L
- 220 L invest

- Sale: 89 lakh
- Cost: 84.75 lakh
- Profit: 4.25 lakh
- New invest = 81.6 lakh
- Expense = 16 lakh
  - Paid = 14.75
  - Arrears=1.25
- Div earned = 2.5 lakh

- Market value of portfolio = 198 lakhs

Solution:

(i) Opening Cash Balance:

Issue value (25 × 10)	250 Lakh
Less: Initial expense	12 lakh
Less: Investment in capital market	220
Cash balance with MF	18 lakh

(ii) Closing Cash Balance:

	₹ in Lakh
Opening cash	18
Add: Inflow from sale of sec.	89
Less: Outflow to buy securities	81.60
Less: Expense paid in cash (16 - 1.25)	14.75

Add: Dividend received	2.5
Less: Dividend paid 70% of realized earning [(89 – 84.75) +2.5] × 70%	4.725
	8.425

(iii) **NAV on 30.6.2024:**

	₹ in Lakh
Market value of investment	274.075
Add: Cash in hand	8.425
Total assets	282.50
Less: Expense payable (liabilities)	1.25
Net assets	281.25

No. of units =25 lakhs

$$NAV = \frac{281.25 \text{ lakh}}{25 \text{ lakh}} = 11.25$$

(iv) **Return of Investor**

Purchase price (NAV_0) =₹10

Sale price (NAV_1) = ₹11.25

Dividend received p.u. $= \left[\frac{4.725 \text{ lakh}}{25 \text{ lakh}}\right]$ = 0.189 per unit

After tax 0.189 -30% = 0.1323

Capital gain = 11.25-10 = 1.25

After tax = 1.25 – 20% = 1

Net Return = 0.1323 + 1 = 1.1323

Return % = 1.1323/10 = 11.323% per month

= 11.323%×12 =135.87% per annum

Part II (Descriptive Questions)

Question-1 Solution:

Interpretation:(Not for exam)

If possible, use all information's given in question. We can use exchange margin, when we assume given exchange rates are Inter Bank rate. Hence, Assume rates are Inter Bank.

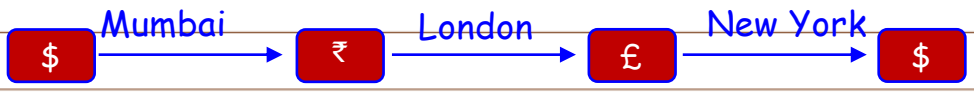
Retail Rate (Customer rate) to be quoted in the multiple of 0.0025 in every forex market.

Mumbai: $1 =	₹ 83.2500	/	₹ 83.7500
	- 0.15%		+ 0.15%
=	₹ 83.1251		83.8756
Rounded off	₹ 83.1250	/	83.8750

London: £1 =	₹ 102.2525	/	102.7550
	- 0.15%		+ 0.15%
=	₹ 102.0991		102.9091
Rounded off	₹ 102.1000	/	102.9100

New York: £1 =	$ 1.2425	/	1.2450
	- 0.15%		+ 0.15%
=	$ 1.2406		1.2468
Rounded off	$ 1.2400	/	1.2475

Calculation of Arbitrage Gain:



(i) sale $ and buy ₹ in India

$1 = ₹ 83.1250 / 83.8750

$ 1,000,000 = ₹(83.1250 × 1,000,000)

= ₹83,125,000

(ii) sale ₹ and buy £ in London

£1 = ₹102.1000 / 102.9100

₹102.9100 = £ 1

₹83,125,000 = £ 83,125,000/102.9100

= £ 807,744.63

(iii) sale £ and buy $ in New York

£1 = $1.2400 / 1.2475

£ 807,744.63 = $ 807,744.63 × 1.2400

= $ 100,1603.34

(iv) Gain = $ 100,1603.34 – 100,00,000 = $1,603.34

QUESTION –2 Solution:

Value of 5 contract = 12,00,000

(i) Price of 1 future contract $= \frac{\text{value of 5 contracts}}{\text{No.of contracts}}$

$= \frac{1200,000}{5} =$

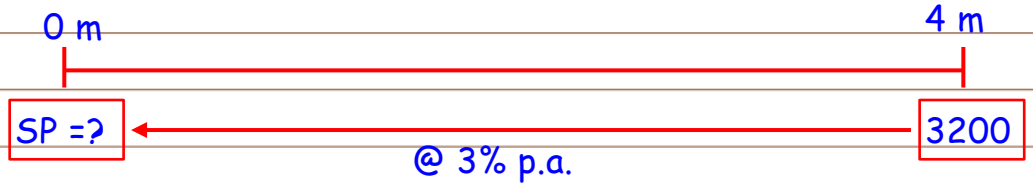
240,000

(ii) Approximate NIFTY point on 1-Feb-2024:

r = 9% p.a. Net rate = 9% - 6% = 3%

Dy = 6% p.a.

4m Future price of NIFTY $= \frac{240,000}{75 \text{ unit}} = 3200$



$$SP = \frac{3200}{(1 + .03 \times \frac{4}{12})} = 3,168.32$$

Alternatively, we may assume continuous compounding.

$$SP = \frac{3200}{e^{.03 \times \frac{4}{12}}} = \frac{3200}{e^{.01}} = \frac{3200}{1.01005} = 3168.16$$

(iii) **Contango = 3200 – 3168.16 = 31.84**

(iv) **Payoff of the transaction:**

Payoff ⇨ Settlement amount on expiry.

NIFTY on expiry = 3100

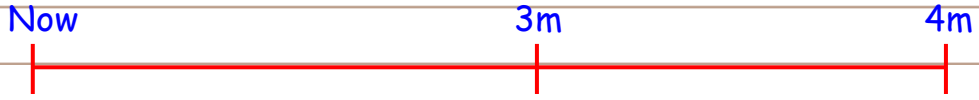
As question is silent regarding Future price on expiry, assume it is equal to spot price (i.e., 3100).

Payoff (Net loss/gain):

Sale price (entry on 1-feb)	3200
Purchase price (notional exit on may end)	3100
Gain per unit	100
Total gain on 5 contracts (100 × 75) × 5	37,500

Payoff receivable = 37,500

QUESTION – 3



- Portfolio: ₹1,01,00,000
- Sale Index Future (4m Fut)
- Exit from Fut (1m Fut)
- Index: 50,000

Expiry of Fut

(i) Price of Future Contract:

4m future price = SP × (1 + i of net rate)

(net rate = 9% - 6% =3%)

$= 50{,}000 \times \left(1 + 0.03 \times \frac{4}{12}\right) = 50{,}500$

Value of 1 contract = 50,500 × 50 = 25,25,000

(ii) Loss/ gain from short position in Index Future:

Value of Index future to be sold

= (1,01,00,000 × Beta) = 1,01,00,000 × 2 = 2,02,00,000

$$\text{No. of contract} = \frac{2{,}02{,}00{,}000}{25{,}25{,}000} = 8 \text{ contracts}$$

Price of Index Future at 3 month time:

Spot price = 45,000

Time to expiation = 1 month

Future price $= 45{,}000 \times \left(1 + 0.03 \times \frac{1}{12}\right) = 45{,}112.5$

To close the position investor Has to buy Index Future at 45,112.5

Loss/gain:

Sale price	50,500.00
Buy price	45,112.50
Gain per unit	5,387.50
Total gain on 8 contracts	**21,55,000**
[5,387.50 × 50] × 8	

Disclaimer:

CMA Institute assumed 3 months' time Index point as Future price which is not appropriate as time to expiration is 1 month.

Future price at 3m = 45,000 (as per ICMAI suggested).

Future price at 3m = 45,000 + 1m Time value = 45,112.5 (as per Author opinion & ICAI suggested).

QUESTION – 4

(i) If the companies invest 20% of investments in **each** of the first two mutual fund ……

A = 20%
B = 20%
Balance = 60% → C = 20%, D = 20%, E = 20%

Investment	Beta (β)	Weight (w)	w × β
A	1.5	0.20	0.30
B	-1.0	0.20	-0.20
C	0.8	0.20	0.16
D	2.0	0.20	0.40
E	0.7	0.20	0.14
Total		**1.00**	**0.80**

Beta = 0.80

(ii) **Bull Phase:**

In this situation, we should invest in securities having higher Beta.
(to be invested in 3 securities with a minimum of 20% in each)

Investment	Beta (β)	Weight (w)	w × β
A	1.5	0.2	0.3
B	-1.0		
C	0.8	0.2	0.16
D	2.0	0.6	1.20
E	0.7		
Total		**1.00**	**1.66**

β = (2 × 60%) + (1.5 × 20%) + (0.8 × 20%) + = 1.66

Expected return = 10 × 1.66 = 16.6%

Bear Phase:

In this situation, we should invest in securities having lower Beta.
(to be invested in 3 securities with a minimum of 20% in each)

Investment	Beta (β)	Weight (w)	w × β
A	1.5		
B	-1.0	0.6	-0.60
C	0.8	0.2	0.16
D	2.0		
E	0.7	0.2	0.14
Total		1.00	-0.30

$\beta = (-1 \times 60\%) + (0.7 \times 20\%) + (0.8 \times 20\%) = -0.3$

Expected return $= -5\% \times (-0.3) = 1.5\%$