FINAL EXAMINATION
GROUP - III
(SYLLABUS 2012)

SUGGESTED ANSWERS TO QUESTIONS

JUNE - 2017

Paper-14 : ADVANCED FINANCIAL MANAGEMENT

Time Allowed : 3 Hours   Full Marks : 100

The figures on the right margin indicate full marks.
All workings must form part of your answers.
Wherever necessary, suitable assumptions may be made and clearly stated in the answer.
No present value table or other statistical table will be
provided in addition to this question paper.
Candidates may use relevant values from the information given at
the end of the question paper for computation of answers.
This paper contains two sections, A and B. Section A is compulsory and
contains question 1 for 20 marks.
Section B contains questions 2 to 8, each carrying 16 marks.
Answer any five questions from Section B.

Section – A

1. (a) Answer all questions: 2×7=14

    (i) An investor buys a call option contract for a premium of ₹ 150. The exercise price is ₹ 15 and the current market price of the share is ₹ 12. If the share price after three months reaches ₹ 20, what is the profit made by the option holder on exercising the option? Contract is for 100 shares. Ignore the transaction charges.

    (ii) Mr. Ravi Kumar can earn a return of 18% by investing in equity shares on his own. Now he is considering recently announced equity based mutual fund scheme in which initial expenses are 6.70% and annual recurring expenses are 1.7%. How much should the mutual fund earn to provide Mr. Ravi Kumar a return of 18 per cent?

    (iii) CNX Nifty is currently quoting at 9100. Each lot is 75. An investor purchases a May Futures contract at 9200. He has been asked to pay 5% margin. What amount of initial margin is he required to deposit? To what level NIFTY futures should in increase to get a gain of 4%?

    (iv) The strike price and the current stock price of a European put option are ₹ 1,000 and ₹ 925 respectively. Compute its theoretical minimum price after 6 months, if the risk-free rate of interest is 5% p.a.

    (v) P Ltd. has an EPS of ₹ 75 per share. Its Dividend Payout Ratio is 30%. Earnings and dividends of the company are expected to grow at 6% per annum. Find out the cost of equity capital if its market price is ₹ 300 per share.

    (vi)   An investor has three alternatives of varying investment values. The data available for each of these alternatives are given below:

Alternative	Expected Return (%)	Standard Deviation of Return
I	23	8.00
II	20	9.50
III	18	5.00

Which alternative would be the best if coefficient of variation is used?

(vii) A student ordered a book from USA on 01-05-2017 for $ 90, when the spot rate was ₹ 68.50/$. Payment was made ten days later, on 11-05-2017 when the book was delivered. By this time, the rupee had appreciated by 10%. How much did it cost the student in Rupees? (Ignore transaction and delivery cost).

(b) State whether the following are 'True' or 'False'. (You may write only the question Roman numeral and state whether True or False without copying the statements into the answer books): 1×6=6
  (i) The risk free interest rate in the futures market is called repo rate.
  (ii) Proxy Beta is the beta of an unlevered firm.
  (iii) CAPM gives the expected return based on systematic risk.
  (iv) If the interest rate is 10% p.a. and the inflation rate is 2% p.a., the investor of an inflation bond earns 12.20%.
  (v) The writer of an uncovered call option does not own the underlying stock.
  (vi) A security is underpriced if the actual return is above the Security Market Line.

Answer:

1. (i) Assuming in call option, the total outgo   Premium + Exercise Price = ₹ 150 + (₹ 15 × 100) = ₹ 1650
  After 3 months, if share price is ₹ 2000, the net profit = 2000 – 1650 = ₹ 350.

  (ii) Let the return on mutual fund be ₹ x. Investors expectation denotes the return from the amount invested.

  Return from mutual funds = $\dfrac{\text{Investor's Expectation}}{(100 - \text{Issue Expenses})}$ + Annual Recurring Expenses

  Or x = $\dfrac{18}{(100 - 6.7)\%}$ + 1.7 = 19.29 + 1.7 = 21%

  Hence, Mutual fund should earn so as to provide a return of 18% = 21%.

  (iii) Initial margin=(5%*9200*75)=34500
        Gain   =4%
  Return(4% of Initial Margin)= 1380
  Return per unit =1380/75=18.4
  Index value should rise to = 9200+18.4=9218.4

  (iv) Theoretical minimum price = [Present Value of Strike Price – Current Stock Price]
  = [1,000 × e^{-rt}]–925 =[1,000 / $e^{0.05 × 0.5}$] –925 =[1,000 / $e^{0.025}$]– 925
  =[1000/1.02532]-925   =   975.3053-925
  =50.3053

  (v) K_e = $\dfrac{\text{Dividend per Share}}{\text{Market Price per Share}}$ + g(Growth Rate) = $\dfrac{75 \times 30\%}{300}$ + 6% = 7.5% + 6% = 13.5%.

  (vi) The Co-efficient of Variation is the ratio of standard deviation to mean.

Alternative	Expected Return (%)	Standard Deviation of Return (%)	Co-efficient of Variation
I	23	8	0.35
II	20	9.5	0.48
III	18	5	0.28

  Alternative III is the best as its co-efficient of variation is the lowest.

  (vii) Rupee is appreciating by 10%,
    Value of dollar is =68.5/(1+10%)X90=Rs. 5604.55

(b)

(iii) True
(iv) False
(v) True
(vi) True
(vii) True
(viii) True

Section – B
Answer any five questions from question No. 2 to 8.
Each question carries 16 marks.

2. **(a) The following particulars are furnished about three mutual funds scheme A, B and C.**

Particulars	Scheme A	Scheme B	Scheme C
Dividend Distributed	₹1.60	-	₹1.15
Capital Appreciation	₹2.77	₹3.33	₹1.79
Opening NAV	₹30	₹25.15	₹21.50
Beta	1.40	1.10	1.35

Ascertain Jensen's Alpha of the three schemes and evaluate their performance, if government of India Bonds carry an interest rate of 6.64% and the NIFTY has increased by 12%. **9**

(b) A mutual fund has an NAV of ₹ 12.50 per unit at the beginning of the year. At the end of the year the NAV increases to ₹ 13.40. In the meanwhile the Fund distributes ₹ 0.85 as dividend and ₹ 0.70 as capital gains.
(i) Calculate the fund's rate of return during the year.
(ii) Assuming that the investor had 240 units and that the distributions have been reinvested at an average NAV of ₹ 12.80, find out the rate of return. **7**

Answer:

2. **(a)**

Particulars	Scheme A	Scheme B	Scheme C
Dividend Distributed	₹1.60	-	₹1.15
Add : Capital Appreciation	₹2.77	₹3.33	₹1.79
Total Return (A)	4.37	3.33	2.94
Opening NAV (B)	₹30	₹25.15	₹21.50
Actual Return (C)=(A)÷(B)×100	14.57%	13.24%	13.67%
Beta (D)	1.40	1.10	1.35
Expected Return under CAPM $[E=(R_P)]$ $[E]=R_F \times B_P \times (R_M - R_F)]$	14.14% [6.64+1.40×(12- 6.64)]	12.54% [6.64+1.10×(12-6.64)]	13.88% [(6.64+1.35×(12-6.64)]
Jensen's Alpha (σ_p)(C)-(E)	0.43% (14.57-14.14)	0.70% (13.24-12.54)	=(0.21%) (13.67-13.88)
Ranking	II	I	III

Schemes A and B have outperformed the market portfolio (Nifty) whereas scheme C has underperformed in comparison with the NIFTY.

(b) (i) Return for the year (all changes on a per unit basis)

Change in price (13.40 - 12.50)	₹ 0.90
Dividend received	₹ 0.85
Capital Gain	₹ 0.70
Total Return	₹ 2.45

Holding Period Return $\frac{₹\,2.45}{₹\,12.50} \times 100 = 19.6\%$

(ii) When all dividends and capital gains distributions are reinvested into additional units of the fund (12.80).

Dividend and Capital gain per unit 0.85+0.70 =	₹ 1.55
Total receipt from 240 units =1.55 × 240 =	₹ 372
Additional unit acquired ₹ 372 / ₹ 12.80 =	₹ 29.06 Units
Value of 269.06 units held at end of year = 269.06×13.40 =	₹ 3605.40
Price paid for 240 units at beginning of year = 240 units ×12.50=	₹ 3000
Holding period return would be = (3605.40 - 3000) / 3000 =	20.18%

3. (a) The following two way quotes appear in the Foreign Exchange Market

	Spot	Three Months' Forward
₹/US $	₹ 66/66.25	₹ 67/67.50

 (i) By what % has the Dollar currency changed? Indicate the nature of change. (Answer with reference to the ask rate).

 (ii) By what % has the Rupee changed? Indicate the nature of change. (Answer with reference to the bid rate).

 (iii) How many US Dollars should a firm sell to get ₹ 45 lakhs after three months?

 (iv) How many rupees is the firm required to pay so as to obtain US $ 2,20,000 in the spot market?

 (v) Assume that the firm has US $ 90,000 in current account earning interest. Return on rupee investment is 10% per annum. Should the firm encash the US $ now or 3 months later? **8**

(b) The returns on Stock PQ and market portfolio for a period of 4 years are as follows:

Year	Return on PQ (%)	Return on Market portfolio (%)
1	12	8
2	15	12
3	11	11
4	2	(-)4

You may opt to use the following additional information:

Particulars	PQ	Market
Mean Return (%)	10	6.75
Standard Deviation (%)	4.84	6.38
Covariance of stock with market = 29.75		

You are required the determine the Characteristic Line for Stock PQ. Find the expected return on PQ when market return improves to 5% in year 5 or decreases to - 8% in the 5th year. **8**

Answer:

3. (a) (i) Ask rate:

Computation of annualized appreciation/depreciation

=(Forward rate-spot rate)/spot rateX100X12/3

=(67.50-66.25)/66.25 X 100X12/3

=7.55%

Result is positive, so appreciation.

(ii) Bid rate:

Computation of annualized appreciation/depreciation

Spot =66 ₹/$	=0.01515 $/₹
3 months forward= 67 ₹/$	=0.01493 $/₹

Difference = (0.00022)

= .00022/.01515X100X12/3

= 5.81%

Result is negative, so depreciation.

(iii) Action= Sell US $ in forward market
Relevant rate= Forward bid rate= ₹67.
US $ required= ₹4500000/₹67=US $ 67164.18

(iv) Action= Buy US $ in spot market
Relevant rate= Spot ask rate= ₹66.25
Rupees required to obtain US $220000=US $220000X ₹66.25 =₹14575000

(v) Evaluation of Investment in Rupee

Particulars	Encash Now	Encash after 3 months
Relevant rate	Spot bid rate=₹66	Forward bid rate=₹67
₹ available for US $90000	₹5940000	₹6030000
Add: Interest for 3 months (if converted now)	5940000X10%X3/12 =148500	Not applicable
Amount available after 3 months	₹6088500	₹6030000

Conclusion: Encashing now yields higher return. So it is better to encash now.

(b) Characteristics line

$y = a + \beta x$

y= Mean return (stock PQ), x= mean return (market)

10=a+0.73 (6.75)

a =5.0725

y=5.0725+0.73x

If x=5
y=5.0725+3.65
y=8.7225
or, y=8.72%

If x=(-)8
y=5.0725+0.73(-8)
y=5.0725-5.84
y=(-)0.767%
y=(-)0.77%

4. **(a) P Ltd. exports electronic instruments to importers of USA, and Japan on 180 days credit terms. You are given the following information of the company:**

Cost and sales information

Particulars	Japan	USA
Variable cost per unit	₹ 600	₹ 1560
Export sale price per unit	Yen 1200	USD 30.50
Receipts from sale due in 180 days	Yen 120,00,000	USD 3,05,000

Foreign Exchange Rate information

Particulars	Yen/₹	USD/₹

Spot Market	1.693 - 1.714	0.01610 - 0.01670
6-Months Forward	1.701 - 1.712	0.01652 - 0.01662
6-Months Spot	1.719 - 1.733	0.01658 - 0.01661

You are asked to advise P Ltd. whether it should hedge its foreign currency risk or not. Present relevant figures in support of your advice. 8

(b) The following data relates to DCB Ltd.'s share prices:

Current Price Per Share　　　　₹ 180
Price per share in the futures　　₹ 200
Market - 6 months
It is possible to borrow money in the market for securities transaction at the rate of 12% p.a.
(i) Calculate the theoretical minimum price of 6 months-Futures contract.
(ii) Explain if any arbitraging opportunities exist. 8

Answer:

4. (a)

Particulars	Japan		USA	
	Bid Rate	Ask rate	Bid rate	Ask Rate
Spot Market	1.714	1.693	0.01670	0.01610
	0.583	0.591	59.880	62.112
6 months forward	1.712	1.701	0.01662	0.01652
	0.584	0.588	60.168	60.533
6 months spot	1.733	1.719	0.01661	0.01658
	0.577	0.582	60.205	60.314

	Japan		USA	
	Spot	Forward	Spot	Forward
Variable Cost per unit(a)	600	600	1560	1560
Export Sale(b)	1200	1200	30.5	30.5
Relevant bid rate(c)	0.577	0.584	60.205	60.168
Export sale per unit(d)	692.4	700.8	1836.253	1835.124
Contribution per unit(e)=(d-a)	92.4	100.8	276.253	275.124
Contribution ratio(f)=e/d	13.34	14.38	15.04	14.99
Advice	Hedging using forward contract.		Do not hedge	

Advice: The Company should hedge its foreign currency risks/exposure in Japanese Yen as it stands to gain a higher contribution to sales ratio and therefore higher profit margin. However for sale to USA, company need not hedge its risk.

Alternative Answer:

1.　Both exports result in positive contribution. Hence export is worthwhile.
2.　Variable cost is in Rs. Hence irrelevant for computation.
3.　Selling price / sale value is receivable in foreign currency.

　　Hence, it is sufficient to use sale value for evaluation of hedging proposal.

　　Yen : Relevant rate when exporter encashes Yen is 1.733 (spot) and 1.712 for Forward rate.
Yen value is higher in spot, and Yen/Rupees decreases in forward → exporter will get more Rupees in forward.
Or, Rs/Yen Spot = 1 ÷ 1.733 = 0.577
Forward = 1 ÷ 1.712 = 0.584
He will gain more Rupees in forward.

Gain = (0.584 – 0.577) × 120,00,000 Yen = (0.007) × 120,00,000 = 84,000
Advice : Hedge exposure in Yen.

US $ - Rupees relevant rate
Forward : Spot = 0.01662
60.168 Rs./$ ×3,05,000 = 183,51,240
No hedge : 60.205 × 3,05,000, or, 3,05,000 / 0.01661 = 183,62,432
Hedge loss avoided = 11,192/-
Forward yields lower gain. Hence no hedge is recommended.

(b) (i) Theoretical Future Price

Particulars	Value
6 months future price	200
Current Stock Price (S_x)	180
Borrowing Rate (r)	12% or 0.12
Time (in years)	6/12 = 0.5 year
Theoretical Future Price (F_x) =	$S_x \times e^{rt}$
	₹ 180 × $e^{0.12 \times 0.5}$
	₹ 180 × $e^{0.06}$
	180 x1.06184
	= ₹191.13

Since the Theoretical Future Price is less than the Expected Future Price, the recommended action would be to sell in the future market.

(ii) Cash flows to gain from Arbitrage opportunity: Activity Flow: Enter into a future contract to sell shares at the rate of ₹ 200 on expiry date, sell the shares at the 6 months future rate of ₹ 200 ,pay the amount of borrowing together with interest.
₹ 180 × $e^{0.12 \times 0.5}$ = 191.13
Net gain = 200 – 191.13=Rs.8.87

5. **(a)** A holds the following portfolio:

Share/Bond	Beta	Initial Price	Dividend	Market price at the end of year
A Ltd.	0.9	30	3	60
B Ltd.	0.8	40	3	70
C Ltd.	0.6	50	2	150
G Bonds	0.01	1000	140	1010

Risk Free return is 14%
Calculate:
(i) The expected rate of return on his portfolio using Capital Asset Pricing (CAPM)
(ii) The average return of his portfolio. **8**

(b) Delta Corporation is considering an investment in one of following two mutually exclusive proposals:
Project A: requiring initial outlay of ₹ 1,80,000.
Project B: requiring initial outlay of ₹ 1,60,000.

The certainty equivalent approach is employed in evaluating risky investment. The current yield on treasury bill is 5% and the company uses this as riskless rate. Expected values of net cash inflow with their respective certainty equivalents are:

Year	Project A		Project B	
	Cash in flow	Certainty Equivalents	Cash in flow	Certainty Equivalents
1	92,000	0.8	92,000	0.9
2	1,02,000	0.7	92,000	0.8
3	1,12,000	0.5	1,02,000	0.6

(i) Which Project should be acceptable to the Company?

(ii) Which Project is riskier and why? Explain.

(iii) If the company uses the risk adjusted discount rate method, which project would be discounted with higher rate? 8

Answer:

5. (a) (i) Expected Rate of return

	Total Investment	Dividend	Capital Gain
A Ltd.	30	3	30
B Ltd.	40	3	30
C Ltd.	50	2	100
GOI Bonds	1000	140	10
	1120	148	170

Expected Return on Market Portfolio = $\dfrac{148+170}{1120}$ = 28.39%

CAPM E (R_P) = R_F + β [E (R_M) − R_F]

A Ltd.	14+0.9(28.39-14)	= 14+12.95	=26.95%
B Ltd.	14+0.8(28.39-14)	= 14+11.51	=25.51%
C Ltd.	14+0.6(28.39-14)	= 14+8.63	=22.63%
GOI Bonds	14+0.01(28.39-14)	=14+0.14	=14.14%

(ii) Average Return of Portfolio = $\dfrac{26.95+25.51+22.63+14.14}{4}$ = $\dfrac{89.23}{4}$ = 22.31%

Alternatively, $\dfrac{0.9+0.8+0.6+0.01}{4}$ = $\dfrac{2.31}{4}$ = 0.5775

14 + 0.5775 (28.39 − 14) = 14 + 8.31 = 22.31%.

(b) (i) Determination of NPV

Project-A

Year	Cash inflow ₹	Certainty equivalent	Adjusted cash in flow	P.V. Factor @ 5%	Total P.V. (₹)
1	92000	0.8	73600	0.9524	70097
2	102000	0.7	71400	0.9070	64760
3	112000	0.5	56000	0.8638	48373
					183230

NPV= ₹ 183230-180000 = 3230

Project B

Year	Cash inflow ₹	Certainty equivalent	Adjusted cash in flow	P.V. Factor @5%	Total P.V. (₹)
1	92000	0.9	82800	0.9524	78859
2	92000	0.8	73600	0.9070	66755
3	102000	0.6	61200	0.8638	52865
					198479

NPV = ₹ 198479 - 160000 = 38479

(i) Project B should be preferred as its NPV is greater.

(ii) Project A is riskier because its certainty equivalent are lower.

(iii) Project A being more risky would be discounted with higher rate.

6. (a) IB and BT face the following interest rates:

Particulars	IB	BT
US Dollars (Floating Rate)	LIBOR +1.5%	LIBOR + 2.0%
Great Britain Pound (GBP) (Fixed Rate)	6.0%	7.5%

IB wants to borrow US Dollars at a floating rate of interest and BT wants to borrow GBP at a fixed rate of interest. A bank is willing to act as intermediary with 50 basis point as its remuneration. If the swap is attractive to IB and BT at 60 : 40 ratio, calculate the rates of that IB and BT will end up paying. **10**

(b) Enumerate the important functions of Forward Market Commission of India. **6**

Answer:

6. (a)

Particulars	Value
1. Difference in Floating Rates [LIBOR+2%]-[LIBOR+1.5%]	0.5%
2. Difference in Fixed Rates[7.5%-6.0%]	1.5%
3. Net Difference [1-2] in absolute terms	1%
4. Amount paid for arrangement in swap option	(0.5%)
5. Net gain(3-4)	**0.5%**
6.IB's share in gain[0.5*60%]	0.3%
7. BT's share in gain [0.5*40%]	0.2%

Effective rate of Interest for IB and BT.

	IB		BT
1.	IB will borrow at Fixed rate	1.	BT will borrow at Floating rate
2.	Pay interest to bankers at Fixed rate, i.e 6%	2.	Pay to bankers at floating rate, i.e [LIBOR+2%]
3.	IB will collect from BT interest amount differential i.e Interest computed at Fixed rate(6%) less Interest computed at Floating rate of (LIBOR+1.5%)=4.5%-LIBOR	3.	BT will pay amount differential to IB i.e Interest computed at Fixed rate(6%) less Interest computed at Floating rate of (LIBOR+1.5%)=4.5%-LIBOR
4.	Receive its share of Gain from BT=0.3%	4.	Pay to IB its share of Gain=0.2%
5.	Effective interest rate=2-3-4=Fixed rate paid by IB-Interest differential received from BT-Share of Gain =(6%)-(4.5%-LIBOR)-(0.3%) LIBOR+1.2%	5.	Pay commission charges to bank for arranging swap contract=0.5%
		6.	Effective interest rate=2+3+4+5 =(LIBOR+2%)+(4.5%-LIBOR)+(0.2%)+(0.5%) =**7.2%**

6 (b) The important functions of Forward Market Commission of India are:

(i)To advice the Central Government in respect of the recognition or withdrawal of recognition from any association. It also advices government about any other matter arising out of the administration of this act.

(ii)Second function of the act includes the task of keeping forward markets under observation and take necessary actions. The actions taken should be according to powers given to the commission by the "Forward Contract Regulation Act".

(iii)To collect information regarding the trading conditions in respect of goods (to

which any of the provisions of this Act is made applicable) including information regarding supply, demand and prices. And publish information whenever the Commission thinks it necessary. It also performs the task of submitting to the Central Government periodical reports on the operation of this Act and on the working of forward markets relating to such goods.

(iv)To make recommendations generally with a view to improving the organization and working of forward markets.

(v)To undertake the inspection of the accounts and other documents of any recognized association or registered association or any member of such association whenever it considers it necessary.

(vi)To perform such specified duties and exercise assigned powers by the "Forward Contract Regulation Act.

7. (a) A contract has been made between M & T Construction Company Ltd. and a foreign embassy to build a block of ten flats to be used by the foreign embassy as guest houses. As per the terms of the contract the foreign embassy would provide the plans and the land costing ₹ 50 lakh to M & T Construction Company Ltd. The Company would build their flats at their own cost and lease them to the foreign embassy for 15 years. As per the contract the flats will be transferred to the foreign embassy after 15 years at a nominal value of ₹ 16 lakh. The company estimates the cost of construction as follows:

Area per flat	1500 sq. feet
Construction cost	₹ 1200 per sq. feet
Registration and other costs	5% of cost of construction

The company will also incur ₹ 8 lakh each in years 14 and 15 towards repairs of flats. M & T Construction Company Ltd. proposes to charge the lease rentals as follows:

Years	Rentals
1-5	Normal
6-10	130% of the normal
11-15	150% of normal

The company's present tax rate averages at 35% which is likely to be the same in future. The full construction and registration costs will be written off over 15 years at a uniform rate and will be allowed for tax purposes.
Additional information: (a) Minimum desired rate of return 10% (b) Rentals and Repairs will arise on the last day of the year and (c) construction, registration and other costs will be incurred at the beginning of the project (t=0).
Calculate the normal lease rent per annum per flat.   **12**

(b) State the differences between the characteristics of Capital Asset Pricing Model (CAPM) and Behavioral Asset Pricing Model (BAPM) relating to model premise, expected returns, Beta and supply/Demand for stock.   **4**

Answer:

7.   (a)

Calculation of present value of Cash Out Flow	₹	₹
Cost of construction 1500 × 1200 × 10		180,00,000
Registration and other costs @ 5%		9,00,000
Cost of repairs	8,00,000	
Less : Tax Savings (35%)	2,80,000	

		5,20,000	
Present value of cost of repairs for year 14 = 5,20,000 × 0.2633		1,36,916	
Present value of cost of repairs for year 15 = 5,20,000 × 0.2393		1,24,488	2,61,404
			191,61,404
Rounded off			191,61,400

Let 'X' be the normal lease rent per 10 flats per annum, P/V of recurring cash inflow for 15 years

Particulars	1-5 years	6-10 years	11-15 years
Lease rent annum	X	1.3 X	1.5 X
Depreciation [189,00,000/15]	12,60,000	12,60,000	12,60,000
PBT	X-12,60,000	1.3X-12,60,000	1.5X-12,60,000
PAT (65%)	0.65X-8,19,000	0.845X-8,19,000	0.975X-8,19,000
CIAT = PAT + Depreciation	0.65X+4,41,000	0.845X+4,41,000	0.975X+4,41,000
PVCF	3.7907	2.3538	1.4615
PV	2.464X+16,71,699	1.989X+10,38,026	1.425X+6,44,522

Total = 5.878x + 33,54,247

P/V of terminal cash inflows :

	₹
Nominal value of flats after 15 years	16,00,000
Less : Tax on profit (35%×16,00,000)	5,60,000
Value	10,40,000
P/V = 10,40,000 × 0.2394 =	2,48,976

At 10% rate of return : P/V of cash inflows = P/V of cash outflows
5.878X + 33,54,247 + 2,48,976 = 191,61,400
5.878X = 155,58,177
X = 26,46,849

Lease rent per flat = ₹26,46,849 / 10 = ₹2,64,685

(b)

	Characteristics of CAPM	Characteristics of BAPM
Model Premise	Presence of Markowitz-based information traders who have specific mean-variance preferences and do not commit cognitive errors.	Market interaction between information traders and noise traders, who do not have mean-variance preferences and do commit cognitive errors.
Expected Returns	Determined by standard betas, measures of systematic risk those are determined with respect to the market portfolio.	Determined by behavioral betas, measures of risk with respect to the mean-variance efficient portfolio. This portfolio differs from the Markowitz-market portfolio and depends on the preferences of the noise traders (e.g., whether growth or value stocks are currently favored)
Beta	Standard betas are difficult to determine because selecting an approximate proxy for the	Behavioral betas are difficult to determine because the preferences of the noise traders can change over

		market portfolio is difficult.	time.
Supply/ Demand for Stock	Determined by standard beta, which is utilitarian in nature.	Determined by the behavioral beta, which is both utilitarian and value – expressive.

8. (a) **An investment management company wants to hedge its portfolios of shares worth ₹15 crore using NSE-NIFTY index futures. The contract size is 100. The index is currently quoted at 9120. The beta of the portfolio is 0.8. The beta of the index may be taken as 1. How many contacts to be traded by the investor?** **5**

   (b) **An investor is holding 2,000 shares of Banani Ltd. Presently the dividend being paid by the company is ₹ 3 per share and the share is being sold at ₹ 30 per share in the market. However several factors are likely to change during the course of the year as indicated below:**

	Risk Free Rate	Market Risk Premium	Beta Value	Expected Growth Rate
Existing	13%	6%	1.7	6%
Revised	11%	5%	1.5	10%

   In view of the above factors advise whether the investor should buy, hold or sell the shares? Why? **5**

   (c) **State the features of Treasury bills.** **6**

Answer:

8. **(a)** Beta of the portfolio =0.8
   Beta of the index =1.0
   Value per futures contract = V_F =9120×100 = ₹912000
   Value of the portfolio = V_F =15 crore
   Hedge ratio= Beta of the port folio/Beta of the index =0.8/1=0.8
   Number of future contacts to be traded
   = Portfolio Value × (Hedge Ratio/Value of a Futures Contract)
   =15 crore × [0.8/912000]
   =131.5789474
   =132 contracts

   (b)

Particulars	Existing	Revised
Rate of Return = $R_f + \beta(R_m - R_f)$	= 13% + 1.7 × (6%) = 23.2%	= 11%+1.5 × (5%)=18.5%
Price of Share $P_0 = \dfrac{D(1+g)}{K_e - g}$	=3x1.06/0.232-0.06=18.48	= 3x1.10/0.185-0.10=38.82
Current Market Price	₹30	₹30
Inference	Overpriced	Underpriced
Decision	Sell	Buy

(c) Features of T-bills:
   - They are negotiable securities.
   - They are highly liquid as they are of shorter tenure and there is a possibility of inter-bank repos in them. There is an absence of default risk.
   - They have an assured yield, low transaction cost, and are eligible for inclusion in the securities for SLR purposes.
   - They are not issued in scrip form. The purchases and sales are effected through the Subsidiary General Ledger (SGL) account.
   - At present, there are 91-day, 182-day, and 364-day T-bills in vogue. The 91-day T-bills are auctioned by the RBI every Friday and the 364-day T-bills every alternate Wednesday, i.e., the Wednesday preceding the reporting Friday.
   - Treasury bills are available for a minimum amount of `25,000 and in multiples thereof.

Values for use if required:

End of Year	1	2	3	4	5
P.V. factor for 5%	0.9524	0.9070	0.8638		
10%	0.9091	0.8264	0.7513	0.6830	0.6209

P.V. Annuity Factor @ 10%
Year 1 to 5 = 3.7907
Year 6 to 10 = 2.3538
Year 11 to 15 = 1.4615