

MAFA/SEM

Roll No.....

Total No. of Questions—6]

[Total No. of Printed Pages—7

Time Allowed—3 Hours

Maximum Marks—100

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Answers to questions are to be given only in English except in the case of candidates who have opted for Hindi medium. If a candidate who has not opted for Hindi medium, answers in Hindi, his answers in Hindi will not be valued.

Question No. 1 is compulsory. Answer any **four** questions from the rest. Figures in the margin indicate marks allotted to each question.

Working notes should form part of the answer.

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1. (a) Consider a two year American call option with a strike price of Rs. 50 on a stock the current price of which is also Rs. 50. Assume that there are two time periods of one year and in each year the stock price can move up or down by equal percentage of 20%. The risk free interest rate is 6%. Using binomial option model, calculate the probability of price moving up and down. Also draw a two step binomial tree showing prices and payoffs at each node. 8
- (b) Mr. X owns a portfolio with the following characteristics : 8

	Security A	Security B	Risk free security
Factor 1 sensitivity	0.80	1.50	0
Factor 2 sensitivity	0.60	1.20	0
Expected Return	15%	20%	10%

It is assumed that security returns are generated by a two factor model.

- (i) If Mr. X has Rs. 1,00,000 to invest and sells short Rs. 50,000 of security B and purchases Rs. 1,50,000 of security A what is the sensitivity of Mr. X's portfolio to the two factors ?

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- (ii) If Mr. X borrows Rs. 1,00,000 at the risk free rate and invests the amount he borrows along with the original amount of Rs. 1,00,000 in security A and B in the same proportion as described in part (i), what is the sensitivity of the portfolio to the two factors ?
- (iii) What is the expected return premium of factor 2 ?
- (c) The share of X Ltd. is currently selling for Rs. 300. Risk free interest rate is 0.8% per month. A three months futures contract is selling for Rs. 312. Develop an arbitrage strategy and show what your riskless profit will be 3 months hence assuming that X Ltd. will not pay any dividend in the next three months. 4
2. (a) An investor has two portfolios known to be on minimum variance set for a population of three securities A, B and C having below mentioned weights : 6

	WA	WB	WC
Portfolio X	0.30	0.40	0.30
Portfolio Y	0.20	0.50	0.30

It is supposed that there are no restrictions on short sales.

- (i) What would be the weight for each stock for a portfolio constructed by investing Rs. 5,000 in portfolio X and Rs. 3,000 in portfolio Y ?
- (ii) Suppose the investor invests Rs. 4,000 out of Rs. 8,000 in security A. How he will allocate the balance between security B and C to ensure that his portfolio is on minimum variance set ?
- (b) Calculate the value of share from the following information : 6
- | | |
|-------------------------------------|--------------------|
| Profit of the company | Rs. 290 crores |
| Equity capital of company | Rs. 1,300 crores |
| Par value of share | Rs. 40 each |
| Debt ratio of company | 27 |
| Long run growth rate of the company | 8% |
| Beta 0.1; risk free interest rate | 8.7% |
| Market return | 10.3% |
| Capital expenditure per share | Rs. 47 |
| Depreciation per share | Rs. 39 |
| Change in Working capital | Rs. 3.45 per share |

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- (c) The returns on stock A and market portfolio for a period of 6 years are as follows : 8

Year	Return on A (%)	Return on market portfolio (%)
1	12	8
2	15	12
3	11	11
4	2	- 4
5	10	9.5
6	- 12	- 2

You are required to determine :

- (i) Characteristic line for stock A
- (ii) The systematic and unsystematic risk of stock A.
3. (a) M/s Gama & Co. is planning of installing a power saving machine and are considering buying or leasing alternative. The machine is subject to straight-line method of depreciation. Gama & Co. can raise debt at 14% payable in five equal annual instalments of Rs. 1,78,858 each, at the beginning of the year. In case of leasing, the company would be required to pay an annual end of year rent of 25% of the cost of machine for 5 years. 12
- The Company is in 40% tax bracket. The salvage value is estimated at Rs. 24,998 at the end of 5 years.
- Evaluate the two alternatives and advise the company by considering after tax cost of debt concept under both alternatives.
- P.V. factors 0.9225, 0.8510, 0.7851, 0.7242, 0.6681 respectively for 1 to 5 years.

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- (b) ABC Ltd. has Rs. 300 million, 12 per cent bonds outstanding with six years remaining to maturity. Since interest rates are falling, ABC Ltd. is contemplating of refunding these bonds with a Rs. 300 million issue of 6 year bonds carrying a coupon rate of 10 per cent. Issue cost of the new bonds will be Rs. 6 million and the call premium is 4 per cent. Rs. 9 million being the unamortized portion of issue cost of old bonds can be written off no sooner the old bonds are called off. Marginal tax rate of ABC Ltd. is 30 per cent. You are required to analyse the bond refunding decision. 6
- (c) Mr. X earns 10% on his investments in equity shares. He is considering a recently floated scheme of a Mutual Fund where the initial expenses are 6% and annual recurring expenses are expected to be 2%. How much the Mutual Fund scheme should earn to provide a return of 10% to Mr. X ? 2
4. (a) Your forex dealer had entered into a cross currency deal and had sold US \$ 10,00,000 against EURO at US \$ 1 = EUR 1.4400 for spot delivery. 6
- However, later during the day, the market became volatile and the dealer in compliance with his management's guidelines had to square-up the position when the quotations were :
- | | |
|------------------|------------------|
| Spot US \$ 1 | INR 31.4300/4500 |
| 1 month margin | 25/20 |
| 2 months margin | 45/35 |
| Spot US \$ 1 | Euro 1.4400/4450 |
| 1 month forward | 1.4425/4490 |
| 2 months forward | 1.4460/4530 |
- What will be the gain or loss in the transaction ?

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(b) On 19th April following are the spot rates

Spot EUR/USD 1.20000 USD/INR 44.8000

Following are the quotes of European Options :

Currency Pair	Call/Put	Strike Price	Premium	Expiry date
EUR/USD	Call	1.2000	\$ 0.035	July 19
EUR/USD	Put	1.2000	\$ 0.04	July 19
USD/INR	Call	44.8000	Rs. 0.12	Sep. 19
USD/INR	Put	44.8000	Rs. 0.04	Sep. 19

(i) A trader sells an at-the-money spot straddle expiring at three months (July 19).

Calculate gain or loss if three months later the spot rate is EUR/USD 1.2900.

(ii) Which strategy gives a profit to the dealer if five months later (Sep. 19) expected spot rate is USD/INR 45.00. Also calculate profit for a transaction USD 1.5 million.

(c) You have following quotes from Bank A and Bank B :

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	Bank A	Bank B
SPOT	USD/CHF 1.4650/55	USD/CHF 1.4653/60
3 months	5/10	
6 months	10/15	
SPOT	GBP/USD 1.7645/60	GBP/USD 1.7640/50
3 months	25/20	
6 months	35/25	

Calculate :

(i) How much minimum CHF amount you have to pay for 1 Million GBP spot ?

(ii) Considering the quotes from Bank A only, for GBP/CHF what are the Implied Swap points for Spot over 3 months ?

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5. The following information relating to the acquiring Company Abhiman Ltd. and the target Company Abhishek Ltd. are available. Both the Companies are promoted by Multinational Company, Trident Ltd. The promoter's holding is 50% and 60% respectively in Abhiman Ltd. and Abhishek Ltd. :

	Abhiman Ltd.	Abhishek Ltd.
Share Capital (Rs.)	200 lakh	100 lakh
Free Reserves and Surplus (Rs.)	800 lakh	500 lakh
Paid up Value per share (Rs.)	100	10
Free float Market Capitalisation (Rs.)	400 lakh	128 lakh
P/E Ratio (times)	10	4

Trident Ltd. is interested to do justice to the shareholders of both the Companies. For the swap ratio weights are assigned to different parameters by the Board of Directors as follows :

Book Value	25%
EPS (Earning per share)	50%
Market Price	25%

- (a) What is the swap ratio based on above weights ?
- (b) What is the Book Value, EPS and expected Market price of Abhiman Ltd. after acquisition of Abhishek Ltd. (assuming P.E. ratio of Abhiman Ltd. remains unchanged and all assets and liabilities of Abhishek Ltd. are taken over at book value).
- (c) Calculate :
 - (i) Promoter's revised holding in the Abhiman Ltd.
 - (ii) Free float market capitalization.
 - (iii) Also calculate No. of Shares, Earning per Share (EPS) and Book Value (B.V.), if after acquisition of Abhishek Ltd., Abhiman Ltd. decided to :
 - (1) Issue Bonus shares in the ratio of 1 : 2; and
 - (2) Split the stock (share) as Rs. 5 each fully paid.

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6. (a) Consider two bonds, one with 5 years to maturity and the other with 20 years to maturity. Both the bonds have a face value of Rs. 1,000 and coupon rate of 8% (with annual interest payments) and both are selling at par. Assume that the yields of both the bonds fall to 6%, whether the price of bond will increase or decrease ? What percentage of this increase/decrease comes from a change in the present value of bond's principal amount and what percentage of this increase/decrease comes from a change in the present value of bond's interest payments ? 8
- (b) Consider a bond selling at its par value of Rs. 1,000, with 6 years to maturity and a 7% coupon rate (with annual interest payment), what is bond's duration ? 6
- (c) If the YTM of the bond in (b) above increases to 10%, how it affects the bond's duration ? And why ? 3
- (d) Why should the duration of a coupon carrying bond always be less than the time to its maturity ? 3

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