

Total No. of Questions—6]

[Total No. of Printed Pages—8

Time Allowed—3 Hours

Maximum Marks—100

KPG

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.

Marks

1. (a) Following information is available for X Company's shares and Call option : 12

Current share price	Rs. 185
Option exercise price	Rs. 170
Risk free interest rate	7%
Time of the expiry of option	3 years
Standard deviation	0.18

Calculate the value of option using Black-Scholes formula.

- (b) Suppose a dealer quotes 'All-in-cost' for a generic swap at 8% against six month libor flat. If the notional principal amount of swap is Rs. 5,00,000, 3

(i) Calculate semi-annual fixed payment.

(ii) Find the first floating rate payment for (i) above if the six month period from the effective date of swap to the settlement date comprises 181 days and that the corresponding libor was 6% on the effective date of swap.

(iii) In (ii) above, if the settlement is on 'Net' basis, how much the fixed rate payer would pay to the floating rate payer ?

Generic swap is based on 30/360 days basis.

- (c) Consider the following information on two stocks, A and B : 5

Year	Return on A (%)	Return on B (%)
2006	10	12
2007	16	18

You are required to determine :

- (i) The expected return on a portfolio containing A and B in the proportion of 40% and 60% respectively.
 - (ii) The Standard deviation of return from each of the two stocks.
 - (iii) The covariance of returns from the two stocks.
 - (iv) Correlation coefficient between the returns of the two stocks.
 - (v) The risk of a portfolio containing A and B in the proportion of 40% and 60%.
2. (a) The following is the yield structure of AAA rated debenture : 4

Period	Yield (%)
3 months	8.5%
6 months	9.25
1 year	10.50
2 years	11.25
3 years and above	12.00

- (i) Based on the expectation theory calculate the implicit one-year forward rates in year 2 and year 3.
- (ii) If the interest rate increases by 50 basis points, what will be the percentage change in the price of the bond having a maturity of 5 years ? Assume that the bond is fairly priced at the moment at Rs. 1,000.

- (b) RST Ltd. has a capital of Rs. 10,00,000 in equity shares of Rs. 100 each. The shares are currently quoted at par. The company proposes to declare a dividend of Rs. 10 per share at the end of the current financial year. The capitalization rate for the risk class of which the company belongs is 12%. What will be the market price of the share at the end of the year, if 4

(i) a dividend is not cleared ?

(ii) a dividend is declared ?

(iii) assuming that the company pays the dividend and has net profits of Rs. 5,00,000 and makes new investments of Rs. 10,00,000 during the period, how many new shares must be issued ? Use the MM model.

- (c) Mr. X established the following spread on the Delta Corporation's stock : 6

(i) Purchased one 3-month call option with a premium of Rs. 30 and an exercise price of Rs. 550.

(ii) Purchased one 3-month put option with a premium of Rs. 5 and an exercise price of Rs. 450.

Delta Corporation's stock is currently selling at Rs. 500. Determine profit or loss, if the price of Delta Corporation's :

(i) remains at Rs. 500 after 3 months.

(ii) falls at Rs. 350 after 3 months.

(iii) rises to Rs. 600.

Assume the size of option is 100 shares of Delta Corporation.

- (d) XL Ispat Ltd. has made an issue of 14 percent non-convertible debentures on January 1, 2007. These debentures have a face value of Rs. 100 and is currently traded in the market at a price of Rs. 90. 6

Interest on these NCDs will be paid through post-dated cheques dated June 30 and December 31. Interest payments for the first 3 years will be paid in advance through post-dated cheques while for the last 2 years, post-dated cheques will be issued at the third year. The bond is redeemable at par on December 31, 2011 at the end of 5 years.

Required :

(i) Estimate the current yield at the YTM of the bond.

(ii) Calculate the duration of the NCD.

(iii) Assuming that intermediate coupon payments are, not available for reinvestment calculate the realized yield on the NCD.

3. (a) A company has an old machine having book value zero—which can be sold for Rs. 50,000. The company is thinking to choose one from following two alternatives : 8

- (i) To incur additional cost of Rs. 10,00,000 to upgrade the old existing machine.
- (ii) To replace old machine with a new machine costing Rs. 20,00,000 plus installation cost Rs. 50,000.

Both above proposals envisage useful life to be five years with salvage value to be nil.

The expected after tax profits for the above three alternatives are as under :

Year	Old existing Machine Rs.	Upgraded Machine Rs.	New Machine Rs.
1.	5,00,000	5,50,000	6,00,000
2.	5,40,000	5,90,000	6,40,000
3.	5,80,000	6,10,000	6,90,000
4.	6,20,000	6,50,000	7,40,000
5.	6,60,000	7,00,000	8,00,000

The tax rate is 40 per cent.

The company follows straight line method of depreciation. Assume cost of capital to be 15 per cent.

P.V.F. of 15%, 5 = 0.870, 0.756, 0.658, 0.572 and 0.497. You are required to advise the company as to which alternative is to be adopted.

- (b) The data given below relates to a convertible bond : 8

Face value	Rs. 250
Coupon rate	12%
No. of shares per bond	20
Market price of share	Rs. 12
Straight value of bond	Rs. 235
Market price of convertible bond	Rs. 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.
- (c) What are the drawbacks of investments in Mutual Funds ? 4
4. (a) An exporter is a UK based company. Invoice amount is \$ 3,50,000. Credit period is three months. Exchange rates in London are : 6

Spot Rate	(\$/£) 1.5865 – 1.5905
3-month Forward Rate	(\$/£) 1.6100 – 1.6140

Rates of Interest in Money Market :

	Deposit	Loan
\$	7%	9%
£	5%	8%

Compute and show how a money market hedge can be put in place. Compare and contrast the outcome with a forward contract.

- (b) An Indian exporting firm, Rohit and Bros, would be cover itself against a likely depreciation of pound sterling. The following data is given : 6

Receivables of Rohit and Bors : £ 500,000

Spot rate : Rs. 56.00/£

Payment date : 3-months

3-months interest rate : India : 12 per cent per annum

UK : 5 per cent per annum

What should the exporter do ?

- (c) The closing value of Sensex for the month of October, 2007 is given below : 8

Date	Closing Sensex Value
1.10.07	2800
3.10.07	2780
4.10.07	2795
5.10.07	2830
8.10.07	2760
9.10.07	2790
10.10.07	2880
11.10.07	2960
12.10.07	2990
15.10.07	3200
16.10.07	3300
17.10.07	3450
19.10.07	3360
22.10.07	3290
23.10.07	3360
24.10.07	3340
25.10.07	3290
29.10.07	3240
30.10.07	3140
31.10.07	3260

You are required to test the weak form of efficient market hypothesis by applying the run test at 5% and 10% level of significance.

Following value can be used

Value of t at 5% is 2.101 at 18 degrees of freedom

Value of t at 10% is 1.734 at 18 degrees of freedom

Value of t at 5% is 2.086 at 20 degrees of freedom

Value of t at 10% is 1.725 at 20 degrees of freedom.

5. (a) (i) The rate of inflation in USA is likely to be 3% per annum and in India it is likely to be 6.5%. The current spot rate of US \$ in India is Rs. 43.40. Find the expected rate of US \$ in India after one year and 3 years from now using purchasing power parity theory. 4
- (ii) On April 1, 3 months interest rate in the UK £ and US \$ are 7.5% and 3.5% per annum respectively. The UK £/US \$ spot rate is .7570. What would be the forward rate for US \$ for delivery on 30th June ? 4
- (b) K. Ltd. is considering acquiring N. Ltd., the following information is available : 12

Company	Profit after Tax	Number of Equity shares	Market value per share
K. Ltd.	50,00,000	10,00,000	200.00
N. Ltd.	15,00,000	2,50,000	160.00

Exchange of equity shares for acquisition is based on current market value as above. There is no synergy advantage available :

- (i) Find the earning per share for company K. Ltd. after merger.
- (ii) Find the exchange ratio so that shareholders of N. Ltd. would not be at a loss.
6. Write short notes on any four of the following : 4×5=20
- (i) Financial restructuring
- (ii) Cross border leasing
- (iii) Embedded derivatives
- (iv) Arbitrage operations
- (v) Rolling settlement.