Birla Institute of Management LIBRARY M.P.

62244

Reg. No. | | | | | | | | |

IV Semester M.B.A (DAY AND EVE) Degree Examination, Sept./Oct.- 2022

MANAGEMENT

Derivatives and Risk Management

(CBCS Scheme 2019-20)

Paper : 4.2.3

Time : 3 Hours **Maximum Marks : 70**

SECTION - A

Answer any five questions, each carries 5 marks. **(5×5=25)**

1. Derivatives are effective risk management tools. Comment on the statement

2. 'Future contracts are obligations, whereas options are rights'. Do you agree? Discuss the difference between futures and option contract with suitable examples.

3. What makes risk important in the selection of projects? Explain briefly the various methods of evaluating risky projects.

4. The following data relates to ONGC Ltd.'s share prices:

   Current price per share Rs. 180

   Price per share in the future market- 6 months Rs. 195

   It is possible to borrow money in the market for securities transactions at @ 12% p. a.
   Required:

   i) Calculate the theoretical minimum price of a 6 month-forward contract by using continuous compounding method.

   ii) Explain if any arbitraging opportunities exist.

5. Consider Shyam, who is optimistic on price rise of RIL, purchasing one futures contract of RIL when futures traded at Rs.1000. Arvind being pessimistic, believed RIL prices going forward would fell and hence he sold one contract of RIL at the same futures price. Each contract entailed 100 shares of the underlying equity shares of RIL. Initial margin of 10% was applicable for both Shyam and Arvind. Both had a facility of maintenance margin of 8%. Rules force both of them to withdraw 50% of the excess over initial margin. Margin calls whenever made are promptly paid by both.

   Based on the above information explain the process of marking to market by assuming next three days the prices of RIL were Rs. 980,960, and 1015 respectively.

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Both Shaym and Arvind meet all margin calls. Both of them withdrawn money whenever they are allowed to withdraw from the Margin Account.

Compute for each day:

1. Margin call;
2. Profit & (Loss) on the contracts;
3. The balance in the Account at the end of the day.

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6. Spot Price Rs.660. Two months Call. Possible prices at expiration: either Rs.700 or Rs.630. Strike price Rs.645. Risk free rate of return: 9% p.a. (not compounded continuously). Find the value of Call using Binomial model.

7. There exists a call option on a stock with the strike price of Rs. 750 selling at a premium of Rs. 65 expiring in 2 months from now. A put option with similar features trades at a price of Rs. 55.

   i) Determine the payoff for the call option with premium

   ii) Determine the payoff for the put option with premium

   Assume for

   i) and

   ii) the payoff of the holder of call and put option for stock prices ranging between Rs. 0 and Rs. 1200 (with interval size of Rs. 100 each)

SECTION - B

Answer any three questions, each carries 10 marks. **(3×10=30)**

8. "Derivatives are contracts, whose value depends on the underlying asset". Elucidate the statement along with the types of derivatives instruments. List some major applications of derivatives. Explain why derivatives are zero-sum games.

9. Consider Ram, a portfolio manager managing a portfolio (beta 1.5) whose current market value of Rs.67.50 Crores. It is expected that the markets are likely to correct downwards and hedging needs to be adopted using NIFTY index futures. Currently NIFTY index futures are quoted at 4,500 with each contract underlies 100 units. Examine a situation when markets correct 10% down and also a possibility market trend upwards by 10% against the belief of Ram, assume that Ram hedged 100% of his portfolio.

10. What is a straddle strategy? How one can created a long straddle strategy from the following quotation on RIL stock:

Exercise Price	Call Option	Put Option
1,000	80	25
1,100	55	40
1,200	35	55

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Also determine:

Max loss to the investor

Max profit to the investor

Upper and Lower breakeven price for the investor

Prepare a table of profit or loss at various price points ranging between 0 to 1500 with an interval size of Rs. 100 each.

11. The current stock price of Infosys is Rs. 1,500. A European call option with an exercise price of Rs. 1,400 will expire in 90 days. The annual yield on 90 days Treasury bill is 8% (continuously compounded). The standard deviation of annual returns on Infosys is 60%. What would be the value of call and put option under Black-Schools and Merton Model?

SECTION - C

12. **Compulsory Case Study** **(1×15=15)**

Prepare a sensitivity analysis statement from the following

Particulars	Rs. In Million years 1 to 10
Investment	250
Sales	200
VC (60% of sales)	120
Fixed costs	20
Depreciation	25
Pre tax Profit	35
Faxes	10
Profit after Taxes	25
Cash flow from operations	50
Net Cash Flow	50

What is the NPV of the Project assuming a cost of a capital of 13%? The Range of values of the underlying variable can take is shown below.

Underlying Variable	Pessimistic	Expected	Optimistic
Investment	300	280	200
Variable cost as Percent of sales	65	60	56

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