Q.P. Code : 61344

Fourth Semester M.B.A. (Day) Degree Examination,
September/October 2020

(CBCS – 2014-15 and onwards)

M.P. Birla Institute of Management LIBRARY

Management

Paper 4.2.3 — RISK MANAGEMENT AND DERIVATIVES

Time : 3 Hours] *[Max. Marks : 70*

SECTION – A

Answer any **FIVE** of the following questions. Each question carries **5** marks : **(5 × 5 = 25)**

1. State and explain in brief the various tools for measuring risk in the context of capital budgeting.

2. Explain with imaginary figures the mechanism of Futures, highlighting the concepts 'Initial Margin', 'Variation Margin' and 'Marking to Market'.

3. What are 'Option Spreads'? Explain briefly the various Option Spread Strategies.

4. The following are the capital investment proposal of a firm :

NPV	Prob
200	.3
600	.5
900	.2

From the above information compute Range, Standard Deviation, and Coefficient of Variation and Semi variance.

5. Suppose that there is a future contract on a share presently trading at Rs. 1,000. The life of future contract is 90 days and during this time the company will pay dividends of Rs. 7.50 in 30 days, Rs. 8.50 in 60 days and Rs. 9.00 in 90 days.

Assuming that the CCRI is 12% p.a., you are required to find out :

(a) Fair value of the contract if no arbitrage opportunity exists;

(b) Value of cost to carry

Assume 360 days in a year.

[Note : $e^{0.01} = 1.01005$, $e^{0.02} = 1.02020$, $e^{0.03} = 1.03045$]

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6. A company's share is currently trading at Rs. 240. After 6 months, the price will be either Rs. 250 with probability of 0.80 or Rs. 220 with probability of 0.20. A European call option exists with an exercise price of Rs. 230. What will be the expected value of call option on maturity date?

7. In January 2020 a six month call on VRK Ltd.'s stock with an exercise price of Rs. 25 sold for Rs. 2. The stock price was Rs. 20. The risk-free interest rate was 5% per annum. How much would you be willing to pay for a PUT Option on VRK Ltd.'s stock with the same maturity and exercise price? What happens if the actual price is different from what you are willing to pay?

SECTION – B

Answer any **THREE** questions. Each question carries **10** marks : **(3 × 10 = 30)**

8. Explain the terms 'forward', 'future' and 'option', and list out the differences between the three.

9. Nirmala Ltd., has an investment proposal, requiring an outlay of Rs. 40,000. The investment proposal is expected to have 2 years economic life with no salvage value. In year 1, there is 0.4 probability that cash inflow will be Rs. 25,000 and 0.6 probability that cash inflow will be Rs. 30,000. The probabilities assigned to cash inflows after tax for the year are as follows :

Cash inflow in year 1 Rs. 25,000		Cash Inflow in year 1 Rs. 30,000	
Cash inflow in year 2	Probability	Cash inflow in year 2	Probability
12000	0.2	20000	0.4
16000	0.3	25000	0.5
22000	0.5	30000	0.1

The firm uses a 10% discounting rate for this type of investment.

Required :

(a) Construct a decision tree for the proposed investment project.

(b) What net present value will the project yield if worst outcome is realized and what is the probability of occurrence of the NPV?

(c) What will be the best NPV and probability of that occurrence?

(d) Will the project be accepted?

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10. A Silver merchant requires in three months' time, 3000 kg of silver for making silver articles during a wedding season. He expects the price to increase. Silver sells at spot rate of Rs. 5,100 per kg. Each silver futures contract (for 50 kgs), expiring in three months sells at Rs. 5,200 per kg. The merchant wants to hedge half his requirement through futures and leave the remaining half uncovered. Explain his position and gains / losses in the spot and futures market, the number of futures to trade in, the effective price per kg for his entire requirement if after 3 months.

(a) Spot rate is Rs. 5,250 per kg and futures is at Rs. 5,400 per kg.

(b) Spot rate is Rs. 5,000 per kg and futures is at Rs. 4,900 per kg.

11. A stock is currently trading @ ₹ 120. It can either 80 upto ₹ 132 or fall to ₹ 105 in a period of three month. If the risk free rate is 9%, what is the value of call option with exos a strike price of ₹ 125 by Binomial method of valuation? Apply Put-call parity equation and determine the value of put option.

SECTION – C

12. This is a compulsory question carrying **15** marks : **(1 × 15 = 15)**

Ajeet Corporation is considering the risk characteristics of a certain project. The firm has identified that the following factors, with their respective expected values, have a bearing the NPV of this project.

Initial investment	Rs. 30,000
Cost of capital	10%
Quantity manufactured and sold annually	1,400
Price per unit	Rs. 30
Variable cost per unit	Rs. 20
Fixed costs	Rs. 3,000
Depreciation	Rs. 2,000
Tax rate	50%
Life of the project	5 years
Net salvage value	Rs. Nil

Assume that the following underlying variables can take the values as shown below :

Underlying variable	Pessimistic	Optimistic
Quantity manufactured and sold	800	1800
Price per unit	Rs. 20	Rs. 50
Variable cost per unit	Rs. 40	Rs. 15

(a) Calculate the sensitivity of net present value to variations in (i) quantity manufactured and sold (ii) price per unit and (iii) variable cost per unit.

(b) Calculate the accounting break-even point and the financial break-even point.

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