[This question paper contains 8 printed pages]

Your Roll No. : .....

Sl. No. of Q. Paper : **7536** **I**

Unique Paper Code : 2923100021

Name of the Paper : Financial Risk Management

Semester : VIII

Time : 3 Hours ***Maximum Marks : 90***

Instructions for Candidates :

(a) Write your Roll No. on the top immediately on receipt of this question paper.

(b) Attempt any **five** questions, all questions carry equal marks

(c) The answers should be short and to the point.

(d) Use of simple calculator is allowed, Log and 'e', MORTALITY table permitted

(e) If any assumption is made while solving a problem, the same must be stated clearly and mentioned in the paper that the same was required to solve the problem

P.T.O.

1. What is Delta Neutrality in option pricing. Is the concept same as Delta Hedging. Explain.

(a) Also assume a current portfolio is delta neutral with gamma of -1,800. You want to buy a new option whose delta is 1.0 and gamma is 0.36. Make the new portfolio delta-gamma neutral. What would be your final strategy for achieving this portfolio.

(b) A shopkeeper comes to a bank with a proposal to fund his project: Initial Outlay/ Investment: 1,00,000, Cash Flows: Rs. 40,000 p.a. for four years, Project Life 4 years, Market Discount rate/Borrowing Rate 15%. The banker makes its own assessment and finds that such a project cannot be accepted as cost of project could escalate by 10% while cash flows might come down by 8% in case of adverse conditions. Shopkeeper on the other hand feels otherwise. Give your viewpoint, whether or not the banker should accept this project for funding keeping into considerations its own assessment and shopkeepers request. Show with calculations along with safety margin of two parameters where bank has expressed its concern.

(c) A Company has total assets of 1.7 crores, with annual Sales being 68 lakhs and an EBIT of 27 lakhs. The latest balance sheet shows

Company's Market Capitalization as 1.8 crores with total debt obligations standing high at 0.5 crores. Company retains 35% of its earnings and maintains a Working Capital of 21 lakhs. Using Altman 'Z' Score, show whether the Company likely to default(all figures except retained earnings are in INR) (8,5,5)

2. (a) The ruling price of the stock is Rs.120 and the option on that stock be available at a price of Rs.110, expiring in an year's time. Risk Free rate is 8% p.a. It is assumed that the share can take only two values on the expiry of the option i.e. Rs 160 or Rs 50. You have to find out the option premium considering each of the following strategies; one at a time.

(i) 'x' shares buy and I call option sell and

(ii) 'x' shares buy and I put option sell

(b) Write down the "basic formula" for computation of premium under a call option using Black Scholes Options Model clearly explaining each of the components used in the formula

(c) Mr A has a portfolio of 1000 shares of a stock which is presently priced @ Rs. 40 per share. He is worried that in case of any crisis or war like situation, the portfolio value might fall resulting in huge loss, however his risk tolerance limit is 15%. Ignoring Premium,

build his portfolio so that he is able to limit the risk which must not be more than 15% (in both directions) in any situation. You are also given additional information, Put Option @ Rs.38 & Call Option @ 42 is also available on the same stock (8,5,5)

3. (a) What do you understand by the term 'Intrinsic Value' in Options Terminology. Using your own illustration, diagrammatically explain the behavior of 'Intrinsic Value' of call option seller and put options seller to the change in the price of the underlying security.

(b) Can we hedge the weather related risks. Explain with your own illustration

(c) What are Option Greeks and what is the purpose of studying Greeks in Option Pricing (8,6,4)

4. (a) Mr B has built up a portfolio which includes stock & option on same stock with following information on option greeks:

Delta: Neutral, Gamma = -1000, Vega = -2000

Mr B now intends to invest further in stocks and options but want to maintain neutrality/joint neutrality with respect to existing positions. He follows a strategy to buy two call options simultaneously, the details of the two options are

Option I: Gamma = 0.3, Vega = 2.0 and Delta = 0.5 &

Option II: Gamma = 0.6, Vega = 1.0 and Delta = 0.5.

(i) Comment, whether Mr B would be able to achieve the desired objective.

(ii) A friend suggested Mr B that his objective remains incomplete unless and until he sells some of his shares. Do you agree with his friend's statement. If yes, then using above information determine how many shares must be sold by the Mr B. If no, then what else the student should do instead of selling the shares

(b) "A put option has a delta of -0.4" Explain the implications of the statement on a your portfolio

(c) Explain giving your own example why two sides of Put Call Parity equation must match. (10,4,4)

5. (a) A new project of a Company has a cash outlay of Rs. 8800 and has a life of three years. The cash inflows amount to Rs.4,500 in each of these three years. A similar project of another company which is listed on the stock market has a project beta as 0.76. The Company decides to evaluate the

project using this beta and applying CAPM methodology to compute the discount rate. The following additional information is available: Risk free rate of 6% p.a, market return as 9% p.a, inflation 6% p.a. Determine whether the Company should accept the project.

(b) For the project information which gives cash flows in years 1 and 2 only apply decision tree technique and determine whether to accept or reject the project. Use discount rate as 8% p.a. The following information is provided

Cash Outlay: Rs. 6,00,000, Year 1 cash flows are given in table below :-

Scenario	Cash Flow	Probability
A (Optimistic)	Rs 4,00,000	0.3
B (Most Likely)	Rs 3,00,000	0.5
C (Pessimistic)	Rs. 2,00,000	0.2

Year 2 Cash Flows:

The cash flows for year 2 are expected to be Rs 5,00,000, Rs 4,00,000 and Rs 2,00,000 with respective probabilities 0.3, 0.5 and 0.2 respectively if Scenario A holds.

The cash flows for year 2 are expected to be Rs 3,00,000, Rs 2,00,000 and Rs 1,00,000 with respective probabilities 0.2, 0.4 and 0.4 respectively if Scenario B holds.

The cash flows for year 2 are expected to be Rs 2,00,000, Rs 1,00,000 and Rs 50,000 with respective probabilities 0.3, 0.5 and 0.2 if Scenario C holds. (6,12)

6. (a) Certainty Equivalent is simply a psychological assessment which can differ vastly from individual to individual. Explain your viewpoint

(b) A project has an initial outlay of Rs 5,00,000 and inflows of Rs. 2,50,00, Rs. 2,00,000, Rs. 1,50,000 and Rs. 1,00,000 in each of the four years. Finance manager has determined Coefficient of Certainty equivalents for all four years as 0.8,0.7.0.6 and 0.5. Using a risk free rate as 8% p.a , determine whether to accept/reject the project.

(c) A Company is confused about whether to go with Project A or B as only one must be selected. Both projects require an investment of Rs 1,00,000 and generates revenue only in one year. The Co. decides to use a market rate of 14% for evaluation

and wants the best of both i.e. maximisation of NPV and minimization of risk. Determine which project should be selected. The following information is available about the two projects:-

Project A		Project B	
Likely Cash Flow Rs	Probability	Likely Cash Flow Rs	Probability
1,80,000	0.4	1,50,000	0.4
1,20,000	0.4	1,30,000	0.5
70,000	0.2	50,000	0.1

(3,5,10)

6. Distinguish between any three of the following. Use your own examples wherever necessary

(i) Credit Rating and Credit Score

(ii) First and Second Order Greeks

(iii) Risk Adjusted Discount Rate and Certainty Equivalent

(iv) Current Cash Flows being perfectly correlated and cash flows being independent of previous periods cash flows

(v) Stock Futures vs. Commodity Futures

(6×3=18)

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