

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 6859

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Unique Paper Code : 2923100021

Name of the Paper : Financial Risk Management

Name of the Course : **B.A Hons Business Economics**

Semester : VIII

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. Attempt any **five** questions, **all** questions carry equal marks
3. The answers should be short and to the point.
4. Use of simple calculator is allowed, Log and 'e', MORTALITY table permitted.
5. 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.

1. (a) What is Option Gamma and how is it different from Option Delta.

A stock is priced at Rs.60 with premium of Rs.10, option delta being 0.3. You have sold 10 call options on the stock (1 contract equivalent to 100 shares). You are now worried of losses, how can you go for delta hedging?

- (b) Parents of a girl child who is 11 years old decide to buy an endowment plan for their daughter for an amount of 1 crore. The plan has both survival and mortality benefits. The plan terminates when girl attains majority age (her becoming adult at 18 years. Determine the premium to be paid for the policy. Market rate of Interest may be taken as 7 % p.a. (Use mortality tables attached)

- (c) A shopkeeper comes to a bank with a proposal to fund his project: Initial Outlay/Investment Rs. 1,50,000, Cash Flows: Rs. 60,000 p.a. for four years, Project Life 4 years, Market Discount rate/Borrowing Rate 18%. 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 thus affecting loan payments. 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.

(8,5,5)

P.T.O.

2. (a) What do you understand by the term "Creation of Risk Free Portfolio".
(b) The ruling price of the stock is Rs. 45 and an option on that stock is available at a price of Rs. 42. The option expires in one year. It is assumed that the share can take only two values on the expiry of the option i.e. Rs. 75 or Rs. 35. Assuming risk free rate of 6% p.a., find out the option premium.
(c) What is Put Call Parity Equation. Clearly explain all its components. (5,8,5)
3. (a) Mr X holds 1000 shares of a stock currently priced at Rs. 60 per share. He is worried that in case of any crisis or war like situation, the portfolio value of shares held might fall resulting in huge loss. His risk tolerance limit is only 15%. Build a portfolio so that Mr. X 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 about options available in the market on same stock, Put Option @ Rs.58 & Call Option @ 62. Kindly test whether your designed portfolio works in both directions (ignore premium).
(b) 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 buyer and put option buyer to the change in the price of the underlying security.
(c) Explain the concept of weather derivatives (6,7,5)
4. (a) What is the difference between first and second order Greeks. Discuss the relevance of second order Greeks in portfolio construction
(b) Mr. Y has built up a portfolio which includes stock & options on same stock with following additional information on option greeks: Delta : Neutral, Gamma = -2000, Vega = -4000. Mr. Y intends to invest further in stocks and options but want to maintain neutrality/joint neutrality with respect to existing positions. Mr Y builds up a strategy to buy two call options simultaneously, the details of the two options are
Option I: Gamma = 0.2, Vega = 2.0 and Delta = 0.4 &
Option II: Gamma = 0.6, Vega = 1.0 and Delta = 0.4.
(i) Comment, on whether or not Mr Y would be able to achieve his desired objective.
(ii) A friend suggested Mr Y 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 Mr Y. If no, then what else the Mr Y should do instead of selling the shares. (8,10)

MORTALITY TABLE : PLEASE ATTACH TO Q PAPER

CSO Mortality Table ALB-Females

Age last birthday x	Number living l_x	Number dying d_x	Age last birthday x	Number living l_x	Number dying d_x
0	10,000,000	18,800	13	9,892,927	7,618
1	9,981,200	8,384	14	9,885,309	8,106
2	9,972,816	7,978	15	9,877,203	8,593
3	9,964,838	7,773	16	9,868,610	9,079
4	9,957,065	7,667	17	9,859,531	9,465
5	9,949,398	7,462	18	9,850,066	9,850
6	9,941,936	7,258	19	9,840,216	10,135
7	9,934,678	7,054	20	9,830,081	10,420
8	9,927,624	7,258	21	9,819,661	10,605
9	9,929,675	6,845	22	9,809,056	10,700
10	9,913,820	6,741	23	9,798,266	10,974
11	9,907,089	6,935	24	9,787,292	11,250
12	9,900,154	7,227	25	9,776,037	11,430

5. (a) A new project of a Company has a cash outlay of Rs. 4,600 and has a life of three years. The cash inflows amount to Rs. 2,500 in each of these three years. A similar project of another company which is listed on the stock market has a project beta as 0.66. 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 4% p.a., market return as 7% 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 7% p.a. The following information is provided; Cash Outlay: Rs. 4,00,000, Year 1 cash flows are given in table below :-

Scenario	Cash Flow	Probability
A (Optimistic)	Rs. 2,50,000	0.3
B (Most Likely)	Rs. 2,00,000	0.5
C (Pessimistic)	Rs. 1,00,000	0.2

Year 2 Cash Flows:

The cash flows for year 2 are expected to be Rs. 4,00,000, Rs. 3,00,000 and Rs. 2,00,000 with respective probabilities 0.3, 0.4 and 0.3 respectively if Scenario A holds.

P.T.O.

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 0.4, 0.4 and 0.2 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. 80,000 with respective probabilities 0.3, 0.4 and 0.3 if Scenario C holds. (6,12)

6. (a) What do you understand by the term 'Certainty Equivalent' in case of a cash flow.
- (b) A project has an initial outlay of Rs. 1,00,000 and inflows of Rs. 55,000, Rs. 40,000, Rs. 30,000 and Rs. 20,000 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 and only one must be selected. Both projects require an investment of Rs. 50,000 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 from the project 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
1,00,000	0.4	1,20,000	0.4
60,000	0.4	50,000	0.5
30,000	0.2	30,000	0.1

(3,5,10)

7. Distinguish between **any three** of the following, give your own examples wherever necessary
- (a) Term Life and Endowment policies of Life Insurance Companies
- (b) In the Money and Out of the Money Put Option
- (c) Spread and Straddle as Option Strategies
- (d) Stock Futures and Stock Forward
- (e) The role of Swap Broker and Swap Dealer in Interest rate swaps

(500)