

Shiraji College, University of Delhi
Department of Mathematics
Assignment (2023-24)

Course: B.Sc (H) Mathematics

Paper: Mathematical Finance

Due Date: 06/05/2024

Semester: VI - A

Faculty: Nitish Kumar

M.M. - 10

Q1. Attempt all the questions.

Do the following questions from book titled,
"Options, Futures and Derivatives" by J.C. Hull,
9th Edition.

Chapter 4:- Qⁿ 3, 4

Chapter 11:- Qⁿ 1, 3, 4, 11

Chapter 12:- Qⁿ 1, 4, 10, 11, 12

Signed

Nitish Kumar

Assistant Professor

Department of Mathematics

SHIVAJI COLLEGE, UNIVERSITY OF DELHI
DEPARTMENT OF Mathematics

INTERNAL TEST (Academic Year 2023-24)

Name of the Course : B.Sc. (H) Mathematics
Name of the Paper : Mathematical Finance
Duration : 1 hour
Date of Test : 03/04/2024

Semester : VI - A
Faculty Name : Nitesh Kumar
Maximum Marks : 20

• Do any two questions. Each question Carry equal marks.

Q1 A bank quotes interest rates at 12% per annum compounded monthly. What is equivalent rate with
(a) Continuous Compounding (b) annual Compounding
(c) quarterly compounding

Q2 Suppose that 6-month, 12-month and 18-month zero rates are 6%, 8% and 10% per annum respectively. Compute the price of 18-month bond which pays coupon at 10% per annum semiannually.

Q3 State and derive put-call parity for non-dividend paying stock.



Faculty Signature:

Set - B

SHIVAJI COLLEGE, UNIVERSITY OF DELHI

DEPARTMENT OF Mathematics

INTERNAL TEST (Academic Year 2023-24)

Name of the Course : B.Sc (H) Mathematics
Name of the Paper : Mathematical Finance
Duration : 1 hour
Date of Test : 29/04/2024

Semester : V
Faculty Name : Nitesh Kumar
Maximum Marks: 20

- Do any two questions. Each question carry 5 marks.

Q1 Suppose that Call options on a stock price with strike price Rs 100 and Rs 110 cost Rs 9 and Rs 6 respectively. How can be following created.

(a) Bull spread. (b) Bear spread.

For what range of prices of stock does the trader makes a loss.

Q2 A stock price is currently Rs 60. It is known at the end of 1-month it will be either Rs 50 or Rs 70. The risk free rate is 8% per annum compounded continuously. What is the value of 1-month European put option with strike price of Rs 58.

Q3 A stock price is currently \$40. Over each of next 3-month periods it is expected to go up by 10% or go down by 10%. The risk free rate is 12% per annum with continuous compounding. What is the value of 6-month American call option with strike price \$42.

Faculty Signature:

Nitesh Kumar

Set-A

SHIVAJI COLLEGE, UNIVERSITY OF DELHI
DEPARTMENT OF Mathematics

INTERNAL TEST (Academic Year 2023-24)

Name of the Course : B.Sc. (H) Mathematics
Name of the Paper : Mathematical Finance
Duration : 1 hour
Date of Test : 29/04/2024

Semester : VI
Faculty Name : Nitesh Kumar
Maximum Marks: 20

• Do any two questions. Each question carry 5 marks.

Q1. Suppose that put options on a stock with strike price Rs 100 and Rs 110 cost Rs 6 and Rs 9 respectively.

How can be following created

(a) bull spread

(b) Bear spread.

For what range of price of stock, does the trader make a profit.

Q2 A stock price is currently Rs 60. It is known at the end of 1 month it will be either Rs 50 or Rs 70. The risk free rate is 8% per annum compounded continuously. What is the value of 1-month European call option with strike price of Rs 58.

Q3 A stock price is currently \$40. Over each of next 3-months periods it is expected to go up by 10% or down by 10%. The risk free rate is 12% per annum with continuous compounding. What is the value of 6-month American put option with strike price of \$42.

Faculty Signature:

Nitesh Kumar