D–3293

B. A. (Part III) EXAMINATION, 2020
MATHEMATICS
(Optional)
Paper Third (C)
(Application of Mathematics in Finance and Insurance)

Time : Three Hours]   [*Maximum Marks : 50*

Note : Attempt any *two* parts from each question. Each part carries equal marks.

Unit—I

1. (a) Explain the job of Financial Manager.

   (b) How does wealth maximisation goal take care of conflict between 'owners' and 'managements' goals ?

   (c) Determine the future value at the end of 5 years of the following series of payments at 5% rate of interest :

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At the end of 1st year	1,000
At the end of 2nd year	2,000
At the end of 3rd year	3,000
At the end of 4th year	4,000
At the end of 5th year	5,000

Unit—II

2. (a) Write the difference between Markowitz model and Sharpe's single index model.

   (b) Write an essay on measurement of returns under uncertainty situation.

   (c) Explain Newton-Raphson method to calculate IRR.

Unit—III

3. (a) What do you mean by Swap ? Illustrate by example use of swap to transfer an Asset.

   (b) State and prove Call and Put Parity theorem.

   (c) A five year bond with a yield of 11% (continuously compounded) pays an 8% at the end of each year. Find :

   (i) Bond's price

   (ii) Bond's duration.

Unit—IV

4. (a) Write an essay on costs and benefits of insurance to the society.

   (b) What do you mean by loss ? Write chances of loss, peril and hazard.

   (c) Would the calculation of premium at age 35 for term to age 100 be the same as the calculation of the net single premium for whole life issued at the same age ? Explain.

Unit—V

5. (a) Write F-recursive and approximate formulae for F. Explain its uses in claims of General Insurance.

   (b) Explain model for claims of reinsurance.

   (c) Explain determination of claims for General Insurance using Poisson distribution.