

MANAGEMENT PROGRAMME

Term-End Examination

December, 2021

**MS-008 : QUANTITATIVE ANALYSIS FOR
MANAGERIAL APPLICATIONS**

Time : 3 hours

Maximum Marks : 100

(Weightage : 70%)

Note :

- (i) Section A has **six** questions, each carrying 15 marks. Attempt any **four** questions from this section.*
 - (ii) Section B is **compulsory** and carries 40 marks. Attempt both the questions.*
 - (iii) Use of calculator is permitted.*
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SECTION A

- 1.** “A model is the representation of a system which, in turn, represents a specific part of reality.” Explain models for Quantitative Analysis in the light of the statement. Also explain the various types of models.

2. Distinguish between Karl Pearson's and Bowley's coefficient of skewness. Which one of these would you prefer and why ?

3. The distribution of the total time a light bulb will burn from the moment it is first put into service is known to be exponential with mean time between failure of the bulbs equal to 1000 hours. What is the probability that a bulb will burn more than 1000 hours ? (The value of $e = 2.7182$)

4. In a locality, where, out of the 5000 people residing, 1200 are above 30 years of age and 3000 are female. Out of the 1200, who are above 30 years of age, 200 are females. Suppose, a person is chosen at random and found to be a female, what is the probability that she is above 30 years of age ?

5. The ranks obtained by a set of ten students in a Mathematics test (Variable X) and a Physics test (Variable Y) are shown below :

Rank for Variable X	1	2	3	4	5	6	7	8	9	10
Rank for Variable Y	3	1	4	2	6	9	8	10	5	7

Determine the rank correlation.

6. Write short notes on any *three* of the following :

- (a) Geometric Progression
- (b) Questionnaire
- (c) Poisson Distribution
- (d) Stratified Sampling
- (e) Time Series Analysis

SECTION B

7. A production engineer finds that, on an average, mechanics working in a machine shop complete a certain task in 15 minutes. The time required to complete the task is approximately normally distributed with a standard deviation of 3 minutes. Find the probabilities that the task is completed (a) in less than 8 minutes, and (b) in more than 9 minutes.

(Area under the standard normal curve from 0 to $z = 0.4901$ (for part a), and area under the standard normal curve from 0 to $z = 0.4772$ (for part b))

8. A cricket team expected the chances of its winning a game as 75 percent. Out of 80 games played during the course of the year, 55 games are won and 25 are lost. Are the observed data consistent with the expectation of the team? Use $\alpha = 0.05$. (The test statistic at 0.05 is 3.84).
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