MS-08

MANAGEMENT PROGRAMME
Term-End Examination
June, 2021

MS-08 : QUANTITATIVE ANALYSIS FOR MANAGERIAL APPLICATIONS

Time : 3 hours   *Maximum Marks : 100*
                    (Weightage : 70%)

*Note : Section A has **six** questions, each carrying 15 marks. Attempt any **four** questions from this section. Section B is **compulsory** and carries 40 marks. Attempt **both** questions. Use of calculator is permitted.*

SECTION A

1. Solve the following system of linear equations, using matrix method or any other method that you prefer :

$$2x + 3y + 3z = 5$$
$$x - 2y + z = -4$$
$$3x - y - 2z = 3$$

2. What do you understand by the terms Primary data and Secondary data ? Explain some of the points to be kept in mind while designing a questionnaire.

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3. What do you mean by Probability ? What are the different approaches to Probability theory ? Explain it with the help of an example.

4. A marketing research firm wants to estimate the share that foreign companies have in the Indian market for certain products. A random sample of 100 consumers is obtained, and it is found that 34 people in the sample are the users of foreign-made products; the rest are users of domestic products. Give a 95% confidence interval for the share of foreign products in this market.

   (The value of test statistic at 95% confidence level is 126)

5. What do you mean by Time Series Analysis ? How would you conduct such an analysis for forecasting the sales of a product in your firm ?

6. Write short notes on any *three* of the following :
   (a) Conditions of Maxima and Minima
   (b) Mathematical Properties of Median
   (c) Exponential Distribution
   (d) Stratified Sampling
   (e) Least Square Criterion

SECTION B

7. An aircraft manufacturer is concerned about variability in the diameters of lids used to seal fuel tanks. Only a narrow range of diameters is acceptable. A sample of 20 fuel-tank lids is taken. After measuring the 20 diameters, an engineer finds them to have a standard deviation of 0·095 inches. Conduct a test at 2% level of significance to see whether population variation of lid diameters equals 0·0001 inches squared, as specified by engineers.

   (The value of test statistic at α = 0·01, 19 degrees of freedom is 36·91)

   (The value of test statistic at α = 0·99 is 7·633 at 19 degrees of freedom)

8. Of the students in a college, it is known that 60% reside in hostel and 40% are day scholars (not residing in hostel). Previous year results report that 30% of all the students who reside in hostel attain A-grade in their annual examination and 20% of day scholars attain A-grade in their annual examination. At the end of the year, one student is chosen at random from the college and he has an A-grade. What is the probability that the student is a hosteler ?

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