K21P 4167

Reg. No. : ....

Name : ....

I Semester M.Com. Degree (CBSS – Reg./Supple./Imp.)
Examination, October 2021
(2018 Admission Onwards)
COM1C02 : QUANTITATIVE TECHNIQUES AND OPERATION RESEARCH

Time : 3 Hours

Max. Marks : 60

SECTION – A

Answer **any four** questions in this Section.

Each question carries **1** mark for Part (a), **3** marks for Part (b) and **5** marks for Part (c).

1. a) What do you mean by degree of freedom ?

   b) What do you mean by level of significance ?

   c) Explain Type I error and Type II error.

2. a) What is multiplication or compound probability theorem ?

   b) What is Bayes' theorem or inverse probability rule ?

   c) Explain characteristics of Binomial distribution.

3. a) Explain Poisson distribution.

   b) Explain the exponential distribution.

   c) The following mistakes per page were observed in a book :

Number of mistakes per page	0	1	2	3
	211	90	19	5

   Fit a Poisson distribution to find the theoretical frequencies.

4. a) What do you mean by multiple solutions in linear programming ?

   b) Expand and explain LPP.

   c) What do you mean by degeneracy in LPP ? Explain how it can be solved.

5. a) What is critical activity in network analysis ?

   b) Expand and explain the acronym of CPM and PERT and contrast it.

   c) Differentiate between Standard Error and Standard Deviation.

6. a) Explain one tailed or two tailed tests.

   b) Differentiate between Standard Error and Standard Deviation.

   c) Explain Null and alternative hypothesis.

SECTION – B

Answer **any two** questions in this Section. **Each** question carries **12** marks.

7. a) A random sample of 200 villages was taken from district A and average proportion per village was 485 with SD 50. Another village random sample of 250 villages from the sample the same district gave an average population of 510 per village with SD of 40. Is this difference between the averages of these of the two samples statistically significant ?

   OR

   b) Briefly explain the different models of operations research.

8. a) A company manufactures two products X and Y on two facilities A and B. The data collected by the analyst is presented in the form of inequalities. Find the optimal product mix for maximizing the profit.

   Maximize $Z = 6x - 2y$ S.T.   Writing in the equation form :

                                      Maximize $Z = 6x - 2y$ S.T.

   $2x - 1y \leq 2$ $2x - 1y = 2$

   $1x + 0y \leq 3$ and both x and y are ≥ 0 $1x + 0y = 3$ and both x and y are ≥ 0

   OR

   b) What you mean by float ? Explain the different types of float.