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K19P 1469

Reg. No. : .....

Name : .....

I Semester M.Com. Degree (CBSS-Reg./Suppl./Imp.)
Examination, October - 2019
(2014 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) **(4×9=36)**

1. a) State Baye's theorem.

   b) What is LPP?

   c) A bag contains 7 white and 9 black balls. 3 balls are drawn together. What is the probability that

      i) all are black

      ii) all are white

      iii) 1 white and 2 black

      iv) 2 white and 1 black

2. a) Define expectation of a random variable.

   b) How does Poisson distribution differs from Binomial distribution?

   c) If 3% of electric bulbs manufactured by a company are defective, find the probability that in a sample of 100 bulbs, exactly five bulbs are defective.

3. a) What is level of significance?

   b) What is Critical Path Method?

   c) What are the assumptions in formulating LPP?

P.T.O.

4. a) What is Operations Research?

   b) Find the expected value of the number of heads when two coins are tossed.

   c) What are the different types of floats?

5. a) Define a Poisson distribution.

   b) What are the uses of Z-test?

   c) Explain the terms standard error, level of significance and rejection region in the context of testing of hypothesis.

6. a) What is PERT?

   b) Briefly explain different phases in the application of network technique.

   c) Construct a network diagram.

Activity	:	A	B	C	D	E	F
Predecessor	:	-	A	A	B	C	D&E

SECTION-B

Answer the **Two** questions in this section. Each question carries **12** marks. **(2×12=24)**

7. a) Eight coins were tossed together 256 times. Find the expected frequencies of Heads. Find mean and SD.

(OR)

   b) Solve graphically:

$$\begin{aligned} &\textit{Maximise} && Z = 9x + 10y \\ &\textit{Subject to} && 11x + 9y \le 9900 \\ & && 7x + 12y \le 8400 \\ & && 6x + 16y \le 9600 \\ & \textit{Where} && x \ge 0,\ y \ge 0. \end{aligned}$$

8. a) A project has the following time schedule.

Activity :	1-2	1-3	1-4	2-5	3-6	3-7	4-6	5-8	6-9	7-8	8-9
Duration :	2	2	1	4	8	5	3	1	5	4	3

Construct Network and compute (1) EST, LST, EFT and LFT of the activities (2) Total float for each activity (3) Critical path and its duration.

(OR)

b) In a certain district A,450 persons were considered regular consumers of tea out of a sample of 1000 persons. In another district B, 400 were regular consumers of tea out of a sample of 800 persons. Do these facts reveal a significant difference between the two districts as far as tea drinking habit is concerned?
