M 24428

Reg. No. : ....

Name : ....

I Semester M.A./M.Sc./M.Com./M.Sc. Computer Science Degree (Reg./Supple./Improv.) Examination, November 2013
COMMERCE
Paper – II : Quantitative Techniques

Time : 3 Hours

Max. Marks : 80

Instruction : *Answer **all** Sections.*

SECTION – A

Answer **any five** questions. **Each** question carries **8** marks.

1. Explain the steps involved in the solution of an operation research problem.

2. Define the term 'linear programming'. Briefly discuss the major applications of linear programming in business practice.

3. What is Poisson Distribution ? State its properties and utilities.

4. What is a Model ? Mention the characteristics of a good model. What are the advantages and limitations of a model ?

5. Point out the role of regression analysis in business decision-making. What are the important properties of regression coefficients ?

6. Write short notes on :

   i) Acceptance Sampling

   ii) Mean Chart.

7. Describe briefly the various schools of thought on probability.

8. Distinguish between CPM and PERT. Explain the three time estimates used in PERT.

(5×8=40)

P.T.O.

SECTION – B

Answer **any two** questions. **Each** question carries **20** marks.

9. The demand of TV set as obtained by sample survey on 7 towns are shown below :

Population (in '000)	11	14	14	17	17	21	35
Demand of TV set	15	27	27	30	34	38	46

   Fit linear regression equation of Y on X and find the demand of TV set in a town of population 30 thousand.

10. A firm makes two products X and Y and has a total production capacity of 9 tonnes per day, X and Y requiring the same production capacity. The firm has a permanent contract to supply atleast 2 tonnes of X at atleast 3 tonnes of Y per day to another company. Each tonne of X requires 20 machine hours production time and each tonne of Y requires 50 machine hours production time ; the daily maximum possible number of machine hours is 360. All the firm's output can be sold and the profit made is Rs. 80 per tonne of X and Rs 120 per tonne of Y. It is required to determine the production schedule for maximum profit and to calculate this profit.

11. The following table gives the information relating to various activities concerning a project.

Name of the Activity	Pre-requisite Activity	Time Estimated (in days)
A	None	2
B	A	3
C	A	4
D	B and C	6
E	None	2
F	E	8

From the above information :

i) Construct a network diagram.

ii) Determine the critical path and total project duration.

iii) Compute total float, free float and independent float for various activities.

12. a) A bag contains 4 red and 3 blue balls. Two drawings of 2 balls are made. Find the probability of drawing first 2 red balls and second 2 blue balls.

   i) If the balls are returned to the bag after the first draw

   ii) If the balls are not returned after the first draw.

   b) In a bolt factory, machines M_1, M_2, M_3 manufacture respectively 25, 35 and 40 per cent of the total output. Of their output 5, 4 and 2 per cent respectively, are defective bolts. One bolt is drawn at random from the product and is found to be defective. What is the probability that it is manufactured in the machine M_2 ? (2×20=40)