



PG – 784

II Semester M.Com. Degree Examination, July/August 2013
(2007-08 Scheme) (NS)
COMMERCE
Paper – 2.5 : Operations Research and Quantitative Techniques

Time : 3 Hours

Max. Marks : 80

Instruction : Answer all Sections.

SECTION – A

1. Answer **any ten** of the following in about **3-4** lines **each**. Each sub-question carries **2** marks. **(10×2=20)**
- a) Define degeneracy.
 - b) What are non-negativity constraints ?
 - c) What is dummy destination ?
 - d) What are mutually exclusive events ?
 - e) Define Poisson distribution.
 - f) State the limitations of IRR.
 - g) What is a critical activity ?
 - h) Define crashing.
 - i) What do you mean by independent float ?
 - j) What is EOQ ?
 - k) What do you mean by Maxi-min criterion ?
 - l) Distinguish between risk and uncertainty.

P.T.O.



SECTION - B

Answer **any three** of the following questions. **Each** question carries **5** marks. **(3×5=15)**

2. Explain the advantages and limitations of linear programming.
3. What is decision tree analysis ? What are its advantages and limitations ?
4. Explain the significance of theory of probability in decision making.
5. The annual demand for an item is 3200 units. The unit cost is Rs. 6 and inventory carrying charges 25% per annum. If the cost of one procurement is Rs. 150, determine :
 - i) Economic order quantity
 - ii) No. of orders per year
 - iii) Time between two consecutive orders, and
 - iv) The optimal cost.

6. Maximise $Z = 2x_1 + 5x_2$

Subject to :

$$x_1 + 4x_2 < 24$$

$$3x_1 + x_2 < 21$$

$$x_1 + x_2 < 9$$

$$x_1, x_2 > 0$$

Solve the problem graphically.

SECTION - C

Answer **any three** of the following questions. **Each** carries **15** marks. **(3×15=45)**

7. Discuss the advantages and disadvantages of simulation techniques.



8. The average selling price of houses in a city is Rs. 50,00,000 with a standard deviation of Rs. 10,00,000. Assuming the distribution of selling price to be normal, find :
- The percentage of houses that sell for more than Rs. 55,00,000.
 - The percentage of houses that sell between Rs. 45,00,000 and Rs. 60,00,000.
 - The percentage of houses that sell for more than Rs. 40,00,000.
9. The North West company is planning to manufacture a race cycle. The project is proposed with the below given activities :
- Construct the network and find critical path and duration.
 - Calculate total float, free float and independent float.

Activity	Predecessor	Time in weeks
A	NONE	4
B	NONE	3
C	NONE	3
D	C	2
E	A, B, D	1
F	A, B, D	2
G	E, F	3
H	A, B, D	3
I	H	5
J	G	2
K	G	4
L	I, J, K	2



10. A factory produces 3 varieties of fountain pens. The fixed and variable costs are given below :

Pen	Fixed Cost	Variable Cost (per unit)
Type A	Rs. 2,00,000	Rs. 10
Type B	Rs. 3,20,000	Rs. 8
Type C	Rs. 6,00,000	Rs. 6

The likely demands under three situations are given below :

Poor demand	25,000 units
Moderate demand	1,00,000 units
High demand	1,50,000 units

If the price of each pen is Rs. 20, prepare the payoff table and opportunity loss table.

11. Write short notes on :

- Assignment models
- Methods of inventory control
- Distinction between PERT and CPM.