

Total number of printed pages-2

44 (6) BCA-HE-6026/6.1.3

2024

OPTIMIZATION TECHNIQUES

Paper : BCA-HE-6026/BCA-6.1.3

Full Marks : 80

Time : Three hours

The figures in the margin indicate full marks for the questions.

Answer **any five** questions.

1. (a) Explain the difference between transportation problem and an assignment problem. Give a mathematical formulation of assignment problem. 8
- (b) Describe the duality theory of L.P.P. 8
2. (a) Explain the role of sensitivity analysis in decision making. 8
- (b) What is linear programming ? What are its major assumptions ? 8

Contd.

3. (a) Briefly explain the simulation techniques applied to queues. 8
- (b) What do you mean by even type of simulation ? Explain. 8

4. Describe Kuhn-Tucker principle. Use Kuhn-Tucker conditions to solve the non-linear problem. 6+10=16

$$\text{Maximize } Z = 2x_1^2 - 7x_2^2 + 12x_1x_2$$

$$\text{subject to } 2x_1 + x_2 \leq 98$$

$$x_1, x_2 \geq 0$$

5. (a) Describe briefly the exponential distribution. 8

- (b) Define queuing model. Describe. 8

6. What are the various steps for solving transportation problem ? Briefly describe each steps. 16

7. (a) What is a cost vector ? 6

- (b) What do you mean by the co-efficient matrix ? 6

- (c) What is a sensitivity analysis ? 4