

Roll No. ....

Total Pages : 02

**BT-8/M-20**

**37203**

OPERATION RESEARCH

EE-421N

Option(E-II)

Time : Three Hours]

[Maximum Marks : 75

**Note** Attempt Five questions in all, selecting at least one question from each Unit.

**Unit I**

1. (a) List and describe various characteristics of operation research. **8**  
(b) Explain linear programming model. **7**

2. Use Simplex method to solve the following problem :

$$\text{Maximize } Z = x_1 + x_2$$

$$\text{Subject to : } x_1 + x_2 \leq 24$$

$$3x_1 + x_2 \leq 21$$

$$x_1 + x_2 \leq 9$$

$$x_1, x_2 \geq 0.$$

**15**

**Unit II**

3. List and explain various steps for finding the solution of a Transportation model. **15**

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**1**

4. (a) Describe the least-cost method for finding the feasible solutions. **8**  
(b) Differentiate between PERT and CPM techniques. **7**

### Unit III

5. List and explain various applications, advantages and limitations of simulation techniques. **15**
6. (a) Write a note on the generation of random numbers. **8**  
(b) Compare various transport models with examples. **7**

### Unit IV

7. (a) Differentiate between single-channel and multi-channel queuing theory. **8**  
(b) List and explain various rules for game theory. **7**
8. Explain arithmetic method for finding the optimum strategies and game value using an example. **15**