Roll No. ..... **Total Pages : 02**

BT-7/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 opeartion research. **8**

(b) Explain linear programming model. **7**

2. Use Simplex method to solve the following problem :

Maximize $Z = 2x_1 + 5x_2$

Subject to : $x_1 + 4x_2 \leq 24$

$3x_1 + x_2 \leq 21$

$x_1 + x_2 \leq 9$

$x_1, x_2 \geq 0$. **15**

Unit II

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

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**