

Seat No. : \_\_\_\_\_

**AE-132**

**April-2023**

**B.Sc., Sem.-VI**

**CC-310 : Statistics  
(Operations Research)**

**Time : 2½ Hours]**

**[Max. Marks : 70**

1. (a) What is Operation Research ? Explain its various applications. 7  
(b) What is linear programming ? Give its mathematical formulation, also give its assumptions and limitations. 7

**OR**

- (a) Discuss the graphical method of solving linear programming problem. 7  
(b) Explain the term : (i) Objective function (ii) Constraints (iii) Slack and artificial variable. 7
2. (a) Describe the computational procedure of the optimality test in a transportation problem. 7  
(b) Write a short note on Vogel's Approximation Method. 7

**OR**

- (a) Explain Hungarian method of solving assignment problem. 7  
(b) How does the problem of degeneracy arise in a transportation problem? Explain how to overcome it. 7
3. (a) Explain the meaning of PERT. Give the advantages and limitations of PERT. 7  
(b) Explain the following terms : EST, EFT, LST and LFT. 7

**OR**

- (a) Write differences between PERT and CPM. 7  
(b) Explain terms : (i) Optimistic time (ii) Pessimistic time (iii) Most Likely time 7
4. (a) What is game theory? State the assumptions and limitations of the game theory ? 7  
(b) Explain the term : (i) Strategies (ii) Value of the game (iii) Payoff matrix. 7

**OR**

- (a) Explain the term : (i) Maximin principle (ii) Minimax principle (iii) Two person zero sum game. 7
- (b) Explain Dominance rule of game theory. 7
5. Attempt any seven : 14
- (1) Define Feasible solution.
  - (2) Define unbounded solution.
  - (3) If three or more variables are there in a linear programming problem then which method is used to solve it ?
  - (4) What do you mean by unbalanced transportation problem ?
  - (5) For a transportation problem having 3 origins and 4 destinations, how many constraints can be formed.
  - (6) In which method of solving transportation problem the unit cost of transportation is not taken into consideration ?
  - (7) Define Dummy activity.
  - (8) Who have developed the technique of PERT and CPM ? When ?
  - (9) Define Float time.
  - (10) Which principle is used to reduce the size of the payoff matrix of the game ?
  - (11) Define saddle point.
  - (12) Does a saddle point always exist in two people zero sum game? Justify your answer.
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