

00285

**MANAGEMENT PROGRAMME**

**Term-End Examination**

**December, 2017**

**MS-051 : OPERATIONS RESEARCH**

*Time : 3 hours*

*Maximum Marks : 100*

*(Weightage 70%)*

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**Note :** (i) *Attempt any four questions.*

(ii) *All questions carry equal marks.*

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1. (a) "Operations Research is an interdisciplinary approach that provides useful solutions". Comment !  
(b) What is a random variable ? What is the probability distribution of a random variable ? Give example.
  
2. (a) Define the following with respect to a linear programming problem :
  - (i) Feasible solution
  - (ii) Unbounded solution  
(b) What is an unbalanced assignment problem ? How do we make it balanced ? Which method is used to find a solution of assignment problem ?

3. (a) Discuss the importance of integer programming models as an aid to managerial decisions.  
(b) Dynamic programming provides us with an alternative methodology for solving a class of multistage problems. Comment !
  4. (a) Define inventory. Some businessmen consider inventory as necessary evil while other think inventory as an asset. What is your point of view ?  
(b) Describe the M/M/I System for the queueing model. Give the formulae for the expected number of customers in the system and in the queue.
  5. (a) Define the following with respect to Game theory :
    - (i) Minimax Criterion of Optimality
    - (ii) Saddle Point  
(b) Give some reasons why management scientists would consider using simulation to solve management problems.
  6. Write short notes on any three of the following :
    - (a) Degeneracy in Transportation Problem
    - (b) Sensitivity Analysis
    - (c) Economic Order quantity
    - (d) Convex function
    - (e) Use of random numbers in simulation
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