MS-51

MANAGEMENT PROGRAMME

03414

Term-End Examination

June, 2016

MS-51 : OPERATIONS RESEARCH

Time : 3 hours   *Maximum Marks : 100*
                                              (Weightage 70%)

Note : (i)   Attempt *any four* questions.
        (ii) All questions carry *equal marks*.

1. (a) "OR is a logical and systematic approach to provide a rational basis for decision making". Comment.

    (b) Discuss some areas of application of OR technique in the business world.

2. (a) What is a dual linear programming problem ? Give rules for formulation of a dual problem.

    (b) ABC Company is engaged in manufacturing five brands of packed snacks. It is having five manufacturing set ups, each capable of manufacturing any of its brands one at a time. The cost to make a brand on these set ups vary according to the following table :

	S_1	S_2	S_3	S_4	S_5
B_1	4	6	7	5	11
B_2	7	3	6	9	5
B_3	8	5	4	6	9
B_4	9	12	7	11	10
B_5	7	5	9	8	11

Assuming five set ups are S_1, S_2, S_3, S_4 and S_5 and five brands are B_1, B_2, B_3, B_4 and B_5.

Find the optimum assignment of products on these set ups resulting in the minimum cost.

3. (a) Briefly describe the Cutting Plane Method for solving an Integer Programming problem.

   (b) What do you understand by Non-linear Programming and Quadratic Programming ? What is the basic difference between them ?

4. (a) Discuss the objectives and functions of inventory.

   (b) For an item, the annual demand is known to be 3000 units which is uniformly distributed over the year. The unit cost of the item is ₹ 300 and the holding cost is 10% of the value. It costs ₹ 450 to place an order for this product.

Determine :

(i) The Economic Ordering Quantity (EOQ).

(ii) EOQ when the ordering cost changes to ₹ 600.

(iii) EOQ when the holding cost becomes 7.5% of the item value.

5. (a) What are the reasons for using simulation ? Describe a practical application of simulation.

(b) Is the following game strictly determinable ? Is it fair ?

	b_1	b_2	b_3
a_1	4	0	2
a_2	6	-1	4
a_3	8	-5	-3

6. Write short notes on **any four** of the following :

(a) Unbounded Solution

(b) Sensitivity Analysis

(c) North West Corner Rule

(d) Convex function

(e) The M/M/1 System

(f) 2Xn Games