Roll No. | | | | | | | | | | | | | Total No. of Pages : 02

Total No. of Questions : 08

M.Sc.(Mathematics) (2015 to 2016 Batch) (Sem.–4)

ADVANCED OPERATIONS RESEARCH

Subject Code : MMS-505

Paper ID : [72897]

Time : 3 Hrs. Max. Marks : 100

INSTRUCTIONS TO CANDIDATES :

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

1. Explain followings :

a) Parametric Programming.

b) Rule of Dominance.

c) Revised Simplex Method.

d) Sensitivity analysis.

2. Solve :

Max $z =$ $5x_1 + 12x_2 + 4x_3$

Subject to, $x_1 + 2x_2 + x_3 < 5$,

$2x_1 - x_2 + 3x_3 = 2$,

$x_1, x_2, x_3 \geq 0$

Also discuss the effect of changing the requirement vector from [5,2]' to [7,2]' on the optimum solution.

3. Explain Graphical method. Solve the following 3×3 game by Graphical method.

A	B			
	1	2	3	
1	7	1	7	1
2	9	-1	1	-1
3	5	7	6	(5)
	9	(7)	(7)	

4. Explain the following :

   a) Recursive relations.

   b) Capital budgeting.

   c) Discuss the method for solving two person zero-sum games.

   d) Comparison between Linear programming versus dynamic programming.

5. Explain Inventory models. If demand rate uniform & production rate infinite then obtain optimal lot size formula. Also find resulting minimum average cost per unit time.

6. Explain :

   a) Discuss the characteristics of dynamic programming.

   b) Explain Probabilistic EOQ models.

7. A company has a demand of 12,000 units/year for an item & it can produce 2,000 such items per month. The cost of one set up is Rs.400 & the holding cost/unit/month is Rs 0.15. Find the optimum lot size & the total cost per year, assuming the cost of 1 unit as Rs 4. Also find the maximum inventory manufacturing time & total time.

8. Explain the followings :

   a) Cargo loading & Reliability problems.

   b) Discuss EOQ with price brakes.