Code No: MC1624/R16

MCA II Semester Regular Examinations, May-2017

OPTIMIZATION TECHNIQUES

Time: 3 Hours **Max. Marks: 60**

Answer Any **FIVE** *Questions*
All Questions Carry Equal Marks

1. a Write down the steps of the graphical method to obtain an optimal solution to a linear programming problem
   b Solve using simplex method:

Maximize $Z = 40x_1 + 80x_2$
Subject to the constraints

$$2x_1 + 3x_2 \le 48,$$
$$x_1 \le 15,$$
$$x_2 \le 10,$$
$$x_1 - x_2 \ge 0.$$

2. a Briefly describe the steps for solving a transportation problem
   b Solve the following assignment problem:

	I	II	III	IV	V
A	1	3	2	3	6
B	2	4	3	1	5
C	5	6	3	4	6
D	3	1	4	2	2
E	1	5	6	5	4

3. a Explain about unrestricted queue by considering an example
   b A factory has 1000 bulbs installed. Cost of individual replacement is Rs. 3/- while that of group replacement Re. 1/-per bulb respectively. It is decided to replace all the bulbs simultaneously at fixed interval & also to replace the individual bulbs that fail in between. Determine optimal replacement policy. Failure probabilities are as given below:

Week	1	2	3	4	5
Failure Probability (P)	0.10	0.25	0.50	0.70	1.00

4. a What are the different types of stochastic models explain them in detail
   b What is instantaneousproduction demand production

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5. a What are the steps involved in the solution of (2 x n) and (m x 2) games.
   b Solve the following (4 x 2) game.

		B_1	2
	1	2	4
A	2	2	3
	3	3	2
	4	-2	6

6. Find the minimum transportation cost for the following data:

Warehouse

		A	B	C	D	E	F	**Available**
Factory	1	9	12	9	6	9	10	5
	2	7	3	7	7	5	5	6
	3	6	5	9	11	3	11	2
	4	6	8	11	2	2	10	9
	Requirement	4	4	6	2	4	2	

7. Solve the following game:

		Player B		
Player A	1	7	2
	6	2	7
	5	1	6

8. a What are the difference between PERT and CPM
   b What are costs that are involved in carrying inventory? Explain them in detail

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