

56027

MBA 2 Year 2nd Semester (N.S.) 2011 Examination–May, 2015

OPERATIONS RESEARCH

Paper: MBA-207

Time: 3 hours

Before answering the questions, candidates should ensure that they have been supplied the correct and complete question paper. No complaint in this regard will be entertained after the examination.

Max. Marks: 80

Note: Attempt five questions. Q.No. 1 from Section-A is compulsory. From Section-B, attempt four questions (one from each Unit). All questions carry equal marks.

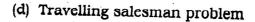
SECTION - A

- 1. Explain and illustrate (if necessary) the following:
 - (a) Symbolic model
 - (b) Unboundedness
 - (c) Degeneracy in transportation model

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- (e) Network
- (f) Merging activities
- (g) Saddle Point
- (h) SIRO system

SECTION - B UNIT - I

- 2. Explain the characteristics and process of managerial decision making. How can OR help in it?
- 3. Solve the following LPP:

 $Maximise z = 3x_1 + 4x_2 + x_3$

Subject to: $x_1 + 2x_2 + 3x_3 \le 90$

 $2x_1 + x_2 + x_3 \le 60$

 $3x_1 + x_2 + 2x_3 \le 80$

 $x_1, x_2, x_3 \ge 0$

UNIT-II

4. A manufacturer wants to ship 22 loads of his product from three sources to five destinations. The distances in kilometers, from sources to destinations are given in the following matrix:

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Source	D_1	$\mathbf{D_2}$	D ₃	D4	D ₅	Supply
S ₁	5	8	6	6	3	8
S ₂	4	7	7	6	5	5
S ₃	8	4	6	6	4	9
Demand	4	4	5	4	8 :	

Obtain an optimal solution to this problem.

5. Time taken (in hours) by five employees in performing five jobs is given in the following matrix:

Employees						
Jobs	A	В	C	D	E	
P	10	5	13	15	16	
Q	3	9	18	13	6	
R	10	7	2	2	2	
S	7	11	9	7	12	

Find the optimal allocation of job. Will the optimal allocation change if job R cannot be assigned to employee E? Show.

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UNIT-III

6. Compare and contrast CPM and PERT. Which are the steps involved in their application? Mention the areas of their application.

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7. Demand pattern for roses (in dozen) at a flower shop is as given below:

Demand	70	80	90	100
No. of days			20	

The roses are purchased at Rs. 10 per dozen and sold at Rs. 30 per dozen. All unsold roses are donated to a local hospital. How much dozens of roses should be purchased by the flower shop owner? Also find the value of EUPI.

UNIT - IV

- 8. Explain the fields of applications of queuing theory and the main characteristics of a queuing system.
- 9. A firm has a single channel service station with the following arrival and service time probability distributions:

Inter arrival time (minutes)	Probability	Service time (minutes)	Probability	
10	0.10	5	0.10	
15	0.25	10	0.17	
20	0.30	15	0.21	
25	0.25	20	0.27	
30	0.10	25	0.25	

Using random number tables, simulate the queuing system for first ten arrivals.

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