Roll No. .....

56027

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

OPERATIONS RESEARCH

Paper : MBA-207

Time : 3 hours ***Max. Marks : 80***

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.

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

(d) Travelling salesman problem

(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 : $x_1 + 2x_2 + 3x_3 \leq 90$

$2x_1 + x_2 + x_3 \leq 60$

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

$x_1, x_2, x_3 \geq 0$

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 :

Destination

Source	D_1	D_2	D_3	D_4	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	B	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
T	7	9	10	4	12

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

UNIT-III

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

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

Demand	70	80	90	100
No. of days	5	10	20	15

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.
