Roll No. .....

56027

MBA (2 Year) 2nd Semester (N. S.) 2011 Examination – May, 2012

OPERATION RESEARCH

Paper : MBA-207

Time : Three hours] *[Maximum 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 examination.

Note : Attempt ***eight*** questions from **Section – A** (each of ***two*** marks) and ***four*** questions from **Section – B** (***one*** question from each Unit and each question of 16 marks).

SECTION – A $2 \times 8 = 16$

1. Discuss the scope of linear programming.

2. When does a LPP have unbounded solution ?

3. Differentiate between transportation and transshipment problems.

4. When does an assignment problem have multiple optimal solutions ?

5. Why do PERT problems have three time estimates ?

6. If P(A) = 0.6, P (B) = 0.4, P (A/D) = 0.05 and P (B/D) = 0.03, find P(D).

7. Differentiate between pure and mixed strategies.

8. Differentiate between MMJ and MMK models.

SECTION – B

UNIT – I

9. Discuss the assumptions and limitations of linear programming. Which are the essential components of a LPP ? 16

10. Solve the following LPP using simplex method : 16

Minimise $Z = 3x_1 + 2.5\ x_2$

Subject to $2x_1 + 4x_2 \geq 40$

$5x_1 + 2x_2 \geq 50$

$x_1, x_2 \geq 0$

UNIT – II

11. Using examples, explain the following : 5, 6, 5

(i) Degeneracy in transportation models.

(ii) Multiple optimal solutions in assignment problems.

(iii) Difference between transportation and transshipment problems.

12. First five batting positions in a cricket team are to be allotted among five batsmen whose average runs on these positions are as given below : 16

Batting Positions

Batsman	I	II	III	IV	V
A	40	40	35	25	50
B	42	30	16	25	27
C	50	48	40	60	50
D	20	19	20	18	25
E	58	60	59	55	53

obtain an optimal solution to this problem.

Another batsman, with following average runs, is also available.

Batting Position	I	II	III	IV	V
Average runs	45	52	38	50	49

should he be included in the team ? If yes, who will be replaced by him.

UNIT – III

13. (a) Differentiate between PERT and CPM. 5, 6, 5

(b) What is a dummy activity ? What purpose does it serve ? Can it create additional paths ? Show.

(c) Define independent and free floats. How are these determined ?

14. A doctor purchases a particular vaccine each Monday. If the vaccine is not used within the week, it becomes useless. The vaccine costs Rs. 30 per dose and the doctor charges Rs. 60 for the same. The doses administered per week has the following distribution : 16

Doses per week	20	25	40	60
No. of weeks	5	15	25	5

Draw a pay-off matrix, obtain a regret matrix and determine the optimal number of doses the doctor should buy. Also find the value of EVPI.

UNIT – IV

15. Write a detailed note on the process, advantages, limitations of simulation. 16

16. Using illustrations, explain the following : 4, 4, 8

(i) Saddle point

(ii) Rule of dominance.

(iii) L_q, L_s, W_q and W_s.