

[ 4 ]

Roll No. ....

5. The following matrix gives the pay off (in ₹) of different strategies  $S_1, S_2, S_3$  against events  $N_1, N_2, N_3$  and  $N_4$  :

Strategy	Nature			
	$N_1$	$N_2$	$N_3$	$N_4$
$S_1$	4,000	- 100	6,000	18,000
$S_2$	20,000	5,000	400	0
$S_3$	20,000	15,000	- 2,000	1,000

Indicate the decision taken under the Pessimistic and Equal Probability approach.

DB-495

M. B. A. (FT) (Second Semester)  
 EXAMINATION, 2012  
 MANAGEMENT SCIENCE  
 (CP-202)

Time : Three Hours

Maximum Marks : 80

Section - A

Note : Attempt any four questions. Each question carries 8 marks.

1. What are the guidelines for the formulation of Linear Programming Model ?
2. Write short notes on the following :
  - (i) Free Float and Total Float
  - (ii) Flow chart for solution of Assignment problem
3. Determine an initial basic feasible solution to the following transportation problem by VAM method :

	$D_1$	$D_2$	$D_3$	$D_4$	Supply
$S_1$	21	16	15	3	11
$S_2$	17	18	14	23	13
$S_3$	32	27	18	41	19
Demand	6	10	12	15	

- Briefly explain 'Duality' in Linear Programming.
- What are the rules to determine the Saddle point in Game Theory problems ?
- Solve the following Assignment problem with the help of Hungarian method :

		Job		
		A	B	C
Workers	1	120	100	80
	2	80	90	110
	3	110	140	120

Assign the jobs to workers, given the time taken for completion, in such a way that total time is minimum.

- What is the basic difference between PERT and CPM ?
- Consider the game with the following pay off table :

		Player B	
		B <sub>1</sub>	B <sub>2</sub>
Player A	A <sub>1</sub>	2	6
	A <sub>2</sub>	-2	$\lambda$

- Show that game is strictly determinable, whatever  $\lambda$  may be.
- Determine the value of game.

### Section - B

**Note :** Attempt any *three* questions. Each question carries 16 marks.

- Explain the nature and scope of Management Science. How does it help in Decision-making ?

- Use the graphical method to solve the following LPP :  
Minimize :

$$z = 3x_1 + 2x_2$$

Subject to the constraints :

$$5x_1 + x_2 \geq 10$$

$$x_1 + x_2 \geq 6$$

$$x_1 + 4x_2 \geq 12$$

and  $x_1, x_2 \geq 0$ .

- A small project has 7 activities, the time estimates are listed below :

Activity	Estimated duration (weeks)		
	Optimistic	Most Likely	Pessimistic
1-2	1	1	7
1-3	1	4	7
1-4	2	2	8
2-5	1	1	1
3-5	2	5	14
4-6	2	5	8
5-6	3	6	15

- Draw the network diagram of activities in the project.
  - What is the expected project length ?
- What do you understand by the problem of sequencing ? Discuss the various aspects of data required to formulate the problem of sequencing two jobs on 'm' machines.