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MMS/M-20 **13027**

OPTIMIZATION MODELS FOR BUSINESS DECISIONS

MBA-201

Time : Three Hours] [Maximum Marks : 70

Note : Attempt *Six* questions in all. Q. No. **1** is compulsory and each part of this carries 4 marks. Remaining questions are of 10 marks each.

1. (a) What are the simplex rules for selecting the pivot column and pivot row ?

(b) Differentiate between Maximin and Minimax Regret criterion.

(c) Briefly explain the role of sensitivity analysis in linear programming.

(d) Describe the Hungarian method of solving the assignment problem.

(e) What is the difference between transportation and trans-shipment problems ?

2. Discuss the role of Management Science techniques for optimum decisions in a business environment.

3. A retired person wants to invest up to an amount of Rs. 30,000 in the fixed income securities. His broker recommends investing in two bonds—bond A yielding 7% per annum and bond B yielding 10% per annum. After some consideration he decides to invest at the most Rs. 12000 in bond B and at least Rs. 6000 in bond A. He also wants that the amount invested in bond A must be at least equal to the amount invested in bond B. What should the broker recommend if the investor wants to maximize this return on investment ? Solve graphically.

4. For the following game, find optimal strategies of A and B and value of game using principle of dominance :

		Player B			
	Strategies	**B_1**	**B_2**	**B_3**	**B_4**
	A_1	7	6	8	9
Player A	A_2	–4	–3	9	10
	A_3	3	0	4	2
	A_4	10	5	–2	0

5. Discuss briefly various inventory models.

6. "Goal programming appears to be the most appropriate, flexible and powerful technique for complex decision problems involving multiple conflicting objectives." Discuss.

7. Draw the network from the following activities and find the critical path and total duration of the project :

Activity	**Duration (weeks)**
1-2	6
1-3	8
2-3	4
2-4	3
3-4 (dummy)	0
3-5	6
4-6	10
5-6	3

8. "When it becomes difficult to use an optimization, technique for solving a problem one has to resort is simulation technique." Discuss.

9. Explain queuing theory problem. Describe the advantages of queuing theory to a business executive with a view to persuading him to make use of the same in management.