

MBA (HRM) 2nd Semester

Course Title: Quantitative Techniques for Business
Course No.: MHRM-203

Maximum Marks: 100
Time Allowed: 3 hours

[SET-I]

SECTION A

Note: This section has ten questions. All questions are compulsory. Each question carries 1 mark. Time allowed for this section is 10 minutes. Answers are to be recorded on the separate sheet available. (Total 10 marks)

Q1. Which of the following criterion is not used for decision making under uncertainty?

- a) Maximin
- b) Maximax
- c) Minimax
- d) Minimize expected loss

Q2. In descriptive statistics, we study

- a) The description of decision making process
- b) The method of organizing, displaying and describing data
- c) How to describe the probability distribution
- d) None of the above

Q3. What is the median of this set of numbers: 2, 5, 7, 9, 4500?

- a) 7.5
- b) 6
- c) 7
- d) 4

Q4. The solution to a transportation problem with m- rows (supplies) and n-columns (destinations) is feasible if number of positive allocations are

- a) $m + n$
- b) $m \times n$
- c) $m + n - 1$
- d) $m + n + 1$

Q5. Graphic method can be applied to solve a LPP when there are only ----- variable

- a) One
- b) More than One
- c) Two
- d) Three

Q6. PERT is _____ in nature.

- a) Deterministic
- b) Both a) and b)
- c) Probabilistic
- d) None of the above

Q7. Mark the correct statement:

- a) Assignment problems can be solved using HAM only.
- b) An assignment problem is a special type of transportation problem.

- c) Unbalanced assignment problems cannot be solved.
- d) An assignment problem cannot be of maximization type.

Q8. A dummy activity is used in the network diagram when

- a) Two parallel activities have the same tail and head events
- b) Two activities have different tail and head events
- c) Both a) and b)
- d) None of the above

Q9. What happens when maximin and minimax values of the game are same?

- a) No solution exists
- b) solution is mixed
- c) Saddle point exists
- d) none of the above

Q10. While assigning random numbers in Monte Carlo simulation, it is

- a) not necessary to assign the exact range of random number interval as the probability
- b) necessary to develop a cumulative probability distribution
- c) none of the above
- d) all of the above

10 X 1

SECTION B

Note: This section comprises of 8 (eight) short-answer questions of 6 (six) marks each, out of which, **attempt any 5 (five) questions. (Total 30 Marks)**

Q11. Define Operation Research. Briefly explain any three applications of operation research.

Q12. Distinguish between PERT and CPM.

Q13. What are decision trees? How and in what type of situations are they employed for decision making?

Q14. Employees Anita, Banta and Charu are to be assigned three jobs I, II and III. The cost matrix is given as under, find the proper assignment.

Man	Anita	Banta	Charu
I	120	100	80
II	80	90	110
III	110	140	120

Q15. What is simulation? List any two areas of application of simulation models?

Q16. Explain transshipment problem as a special case of transportation problem.

Q17. Explain the role of dummy activities during network construction.

Q18. Elucidate role of SPSS as widely used software for statistical analysis.

5 X 6

SECTION C

Note: This section has ten questions. **Attempt five questions, one from each unit.** Each question carries **12 marks. (Total 60 Marks)**

UNIT-I

Q19. List and briefly explain various techniques that are used for taking decisions under conditions of uncertainty?

OR

Q20. What do you understand by sampling? Explain various methods of sampling with relevant examples wherever necessary.

UNIT-II

Q21. What are Linear Programming problems? Discuss the applications of Linear Programming in solving management problems.

OR

Q22. Solve the following Linear Programming problem using graphical method.

Maximize $Z = 3x_1 + 2x_2$

Subject to the constraints

$$x_1 + x_2 \leq 4$$

$$x_1 - x_2 \leq 2$$

$$\text{and } x_1, x_2 \geq 0$$

UNIT-III

Q23. What is assignment problem? Explain Hungarian Assignment Method (HAM) as a technique to get optimum assignments with help of appropriate example.

OR

Q24. Solve the following transportation problem

		DESTINATION				SUPPLY
		P	Q	R	S	
SOURCE	A	21	16	25	13	11
	B	17	18	14	23	13
	C	32	17	18	41	19
	DEMAND	6	10	12	15	43

UNIT-IV

Q25. State with help of appropriate examples various rules for constructing a project network.

OR

Q26. A construction project consists of the following jobs, whose precedence relationships are given below:

Job	Duration (Days)
1-2	15
1-3	15
2-3	3
2-5	5
3-4	8
3-6	12
4-5	1
4-6	14
5-6	3
6-7	14

For the above problem:

- Draw an arrow diagram representing the project.
- Find the critical path and the total project duration
- Create an event table to find out the earliest and latest event time and total float for each activity.

UNIT-V

Q27. What is a Game? What are the different strategies available with the player in a zero sum game theory? Describe the maximin and minimax principles of game theory with appropriate example.

OR

Q28. Give a detailed account of concept of dominance used in simplifying the solution of a rectangular game.

Player A	Player B	
	B_1	B_2
A_1	1	-1/2
A_2	-1/2	0

5 X 12