

SIDDHARTH INSTITUTE OF ENGINEERING & TECHNOLOGY:: PUTTUR
(AUTONOMOUS)
MBA I Year II Semester Regular & Supplementary Examinations August-2023
OPERATIONS RESEARCH

Time: 3 Hours

Max. Marks: 60

SECTION-A

(Answer all Five Units 5 x 10M = 50M)

Marks)

UNIT-I

- 1 Solve the following Linear Programming Problem (LPP) by using Graphical Method: **L3 10M**

$$\text{Maximize } Z = 100X_1 + 80X_2$$

$$\text{Subject to constraints } 5X_1 + 10X_2 \leq 50, 8X_1 + 2X_2 \geq 16, 3X_1 - 2X_2 \geq 6$$

$$X_1 \text{ and } X_2 \geq 0.$$

OR

- 2 What are the major applications of Operations Research in business, commerce and industry. **L1 10M**

UNIT-II

- 3 What are the steps involve in Vogel's approximation method to find the initial basic feasible solution for a transportation problem. **L1 10M**

OR

- 4 Find an initial basic feasible solution to the following transportation problem using Least cost cell method. **L3 10M**

		To			
		1	2	3	Supply
From	1	2	7	4	5
	2	3	3	1	8
	3	5	4	7	7
	4	1	6	2	14
Demand		2	9	18	

UNIT-III

- 5 Discuss the algorithm for for $m \times 2$ game in Graphical Method. **L2 10M**

OR

- 6 Consider the following payoff matrix with respect to player A and solve it optimally by using graphical method. **L2 10M**

		Player B				
		1	2	3	4	5
Player A	1	3	0	6	-1	7
	2	-1	5	-2	2	1

UNIT-IV

- 7 Find the Critical Path for the following problem: **L3 10M**

Activity	1-2	1-3	2-4	3-4	4-5
Duration	6	2	4	3	4

OR

- 8 Find the Critical Path for the following problem: **L3 10M**

Activity	1-2	1-3	1-4	2-5	3-5	4-6	5-6
Duration	6	2	4	3	4	3	6

UNIT-V

- 9 A fleet owner finds from his past experience records that the cost of the machine is Rs 6000/- and the running cost are given below. At what age the replacement is due: **L1 10M**

Year	1	2	3	4	5	6	7	8
Maintenance cost	1000	1200	1400	1800	2300	2800	3400	4000
Resale value	3000	1500	750	375	200	200	200	200

OR

- 10 What are the steps involved in the problems with n jobs through machines A,B,C. **L2 10M**

SECTION – B
(Compulsory Question)

11

1 x 10 = 10 Marks

CASE STUDY

Players A and B play a game in which each player has three coins (20p, 25p and 50p). Each of them selects a coin without the knowledge of the other person. If the sum of the values of the coins in an even number, A wins B's coin. If that sum is an odd number, B wins A's coin.

- a) Develop a payoff matrix with respect to player A
- b) Find the optimal strategies for the players.

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