Lukhdhirji Engineering College, Morbi

Department of Mechanical Engineering

Assignment 5- Game Theory (CO4)

Subject: Operation Research (3151910) Semester : 5th

Year : 2022-23

1. What do you understand by ‘zero-sum’ in the context of game theory? Explain the meaning following terms used in game theory (1) Saddle Point (2) Pure Strategy (3)Mixed Strategy(4) Minimax principle (5) Payoff Matrix
2. What are the limitations of games theory?
3. What is ‘dominance rule’ in game theory? Solve the game by using Dominance method

4. Solve the following pay-off matrix for player A. Also find out the optimal strategies andvalue of the game.

	PLAYER B			
PLAYER A		B1	B2	B3
	A1	275	-50	-75
	A2	125	130	150

5. What is saddle point? Find out saddle point for the following game:

		Player B			
		B1	B2	B3	B4
Player A	A1	62	44	55	40
	A2	60	45	48	51
	A3	40	42	30	40

6. Solve the following pay-off matrix for player A. Also find out the optimal strategy and valueof the game using arithmetic method.

	B1	B2	B3
A1	1	3	11
A2	8	5	2

7. The following is the pay-off matrix between player X and Y. find the optimal strategies, its frequencies and the value of game. Use rule of dominance and oddment in calculations

		Player Y			
		A	B	C	D
Player X	I	3	2	4	0
	II	3	4	2	4
	III	4	2	4	0
	IV	0	4	0	8

8. Payoff matrix of a game is given below. It game has a saddle Point? If no, Reduce the size ofthe game using dominance rule.

		Player B			
		B1	B2	B3	B4
Player A	A1	3	2	4	0
	A2	3	4	2	4
	A3	4	2	4	0
	A4	0	4	0	8

9. There are two competing departmental stores A and B in a city. Both have equal reputation and the total no. of customers is equally divided between the two stores. Both the stores plan to run annual discount sales in the last week of December. For this they want to attract more no. of customers by using advertisement through newspaper, radio and T.V. by viewing the market trend, the store A constructed the following pay-off matrix where the numbers in the matrix indicates gain or a loss of customers. Find the optimum strategies for stores A and B. also find the value of the game.

	Store A		
Store B	40	50	-70
	10	25	-10
	100	30	60