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IE-3201

OPERATION RESEARCH 2

15-38: Game Theory (Pure Strategy)

		PLAYER B			
		S_1	S_2	S_3	Row Minimax
PLAYER A	A_1	85	60	40	40
	A_2	92	85	81	81
	A_3	100	88	82	82
	Column Max	100	88	82	

Minimax

Maximin = Maximax

$$82 = 82$$

$$V = 82$$

therefore, the game has a saddle point at the cell corresponding to Row 3 and Column 3

OPTIMAL PROBABILITIES

$$\text{PLAYER A } (A_1, A_2, A_3) = [0, 0, 1]$$

$$\text{PLAYER B } (S_1, S_2, S_3) = [0, 0, 1]$$

GAME THEORY (MIXED STRATEGY)

The data given in Problem 15-38 has a saddle point of 82, therefore mixed strategy is not applicable.

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15-39 GAME THEORY (PURE STRATEGY)

		PLAYER B				
PLAYER A		S_1	S_2	S_3	S_4	Row Min
	A_1	-20	60	30	-5	-20
	A_2	40	50	35	0	0
	A_3	-50	100	45	-10	-50
	A_4	12	15	15	10	10
	Column Max	40	100	45	10	Maximin

$$\text{Maximin} = \text{Minimax}$$

Minimax

$$10 = 10$$

$$v = 10$$

Therefore, the game has a saddle point at the cell corresponding to row 4 and column 4.

OPTIMAL PROBABILITIES

$$\text{PLAYER A } (A_1, A_2, A_3, A_4) = A [0, 0, 0, 1]$$

$$\text{PLAYER B } (S_1, S_2, S_3, S_4) = B [0, 0, 0, 1]$$

GAME THEORY (MIXED STRATEGY)

Since there is saddle point in pure strategy under game theory in problem 15-39, Mixed Strategy will no longer applicable.