

Assignment 1

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Q1.

1. Extensive Form Formally:

$N = \{1,2\}$ Set of players

Q2.

$\Gamma = \langle 2, \{S_A, S_B\}, \{U_A, U_B\} \rangle$

$S_A = \{A_1, A_2, A_3\}$

$S_B = \{B_1, B_2\}$

A/B	B1	B2
A1	-1,1	0,4
A2	2,2	3,3
A3	0,1	2,2

- A_2 is a Strongly Dominant Strategy for player A because

$$U_A(s_A, s_{-i}) < U_A(A_2, s_{-i}) \forall s_{-i} \in S_{-i} \ \& \ \forall s_A \in S_A / \{A_2\} \quad (1)$$

- $U_A(A_2, B_1) > U_A(A_1, B_1)$
- $U_A(A_2, B_1) > U_A(A_3, B_1)$
- $U_A(A_2, B_2) > U_A(A_1, B_2)$
- $U_A(A_2, B_2) > U_A(A_3, B_2)$

- B_2 is a Strongly Dominant Strategy for player B because

$$U_B(s_B, s_{-i}) < U_B(B_2, s_{-i}) \forall s_{-i} \in S_{-i} \ \& \ \forall s_B \in S_B / \{B_2\} \quad (2)$$

- $U_B(B_2, A_1) > U_B(B_1, A_1)$
- $U_B(B_2, A_2) > U_B(B_1, A_2)$
- $U_B(B_2, A_3) > U_B(B_1, A_3)$

Both Players have a dominant Strategy hence Dominant Strategy Equilibrium exist : Dominant Strategy Equilibrium : (A_2, B_2)