









- I Consider the following Game Payoff Matrix that involves two players with three strategies each:

		Player 1		
		<i>L</i>	<i>C</i>	<i>R</i>
Player 2	<i>A</i>	1, 1	0, 0	2, -1
	<i>M</i>	4, 3	1, 2	0, 4
	<i>U</i>	1, 0	0, 1	3, 2

- What is the Dominant Strategy for player 1?
- What is the Dominant Strategy for player 2?
- What is the Dominant Strategy Equilibrium if any?
- What is the Nash Equilibrium for the game above?

Answer)

		Player 1		
		<i>L</i>	<i>C</i>	<i>R</i>
Player 2	<i>A</i>	1, 1	0, 0	2, -1
	<i>M</i>	4, 3	1, 2	0, 4
	<i>U</i>	1, 0	0, 1	3, 2

		Player 1 		
		<i>L</i>	<i>C</i>	<i>R</i>
 Player 2	<i>A</i>	1, 	0, 0	2, -1
	<i>M</i>	 4, 3	 1, 2	0, 
	<i>U</i>	1, 0	0, 1	 3, 

- a) Player 1 does not have a dominant strategy.
- b) Player 2 does not have a dominant strategy.
- c) This game has no dominant strategy equilibrium.
- d) There is one unique Nash Equilibrium for the game which is (U, R)

- II Consider the game of driving between two cars captures by three strategies: drive left, drive right, drive zig-zag, the payoff for each strategy is listed in the matrix below:

		Car 2		
		Drive Left	Drive Right	Drive Zig-Zag
Car 1	Drive Left	4,0	2,1	3,2
	Drive Right	2,2	3,4	0,1
	Drive Zig-Zag	2,3	1,2	0,3

- a) Find the Dominant strategies for both cars
b) Find the Nash Equilibrium

Answer)

		Car 2 ○		
		Drive Left	Drive Right	Drive Zig-Zag
Car 1 ○	Drive Left	4,0	2,1	3,2
	Drive Right	2,2	3,4	0,1
	Drive Zig-Zag	2,3	1,2	0,3

- a) There are no dominant strategies for both cars.
- b) This game has two Nash Equilibriums;
(drive right, drive right) and (drive left, drive zig-zag)

III Let's Examine the familiar "Rock, Paper, Scissor" game. There are two players involved in this game and it is played simultaneously (at the same time) by each of the players choosing either "Rock", "Paper", or "Scissor".

The winner for this game is determined as follow

- Rock wins scissor
- Paper win rock
- Scissor win paper

a) Draw the payoff matrix for this game by choosing 0 for the draw, -1 for the loss and 1 for the win.

b) Find the Nash equilibrium for the Rock Paper Scissor Game

Answer)

a) Payoff matrix:

<div>○</div> <div>PLAYER 1</div>	<div>PLAYER 2 ○</div>			
		ROCK	PAPER	SCISSOR
	ROCK	(0, 0)	(-1, 1)	(1, -1)
	PAPER	(1, -1)	(0, 0)	(-1, 1)
	SCISSOR	(-1, 1)	(1, -1)	(0, 0)

b) Nash Equilibrium

<div>○</div> <div>PLAYER 1</div>	<div>PLAYER 2</div> ○			
		ROCK	PAPER	SCISSOR
	ROCK	(0, 0)	(-1, 1)	(1 , -1)
	PAPER	(1 , -1)	(0, 0)	(-1, 1)
	SCISSOR	(-1, 1)	(1 , -1)	(0, 0)

Hence, there is no Nash Equilibrium.