Game Theory

(a) Game with pure strategy (zero-sum game)

1. Two companies A and B sell two brands of flu medicine. Company A advertise in radio (A_1), television (A_2) and newspaper (A_3). Company B in addition to radio (B_1), television (B_2) and newspaper (B_3) uses mail brochures (B_4). Depending upon the effectiveness of each advertising campaign, one company can capture the portion of market from other. The following matrix shows the percentage of market lost or captures by company A. Find the value of the game.

	B_1	B_2	B_3	B_4
A_1	8	-2	9	-3
A_2	6	5	6	8
A_3	-2	4	-9	5

2. Two computer hardware manufacture companies, company A and company B competing for supplying computers to the government department. Each company has listed its strategy for selling computers

   The strategies for company A are
   (a) Giving special price
   (b) Giving 20% worth of additional hardware
   (c) Supplying computer furnitures free of cost
   The strategies for company B are
   (a) Giving special price
   (b) Giving 30% worth of additional hardware
   (c) Giving free training to the buyers

The estimate gain/loss ratio of each strategy is given below.
Calculate the value of the game.

		Company B		
		1	2	3
Company A	1	20	15	22
	2	35	45	40
	3	18	20	25

3. Two players A and B play the coin tossing game. Each player unbeknownst to the other, choses a head (H) or a tail (T). Both players would reveal their choices simultaneously. If they match (HH or TT) player A will receive a $1 from B otherwise A pays B $1. What is the value of the game?