PROBLEM SET 3

(Source: Ch2, An Introduction to Game Theory, *'Martin J. Osborne')*

Q1.

Formulate a strategic game that models a situation in which two people work on a joint project in the case that their preferences are the same as those in the game in the figure below, except that each person prefers to work hard than to goof off when the other person works hard. Present the payoff matrix for the game. Find the NE for both the games.

	Work hard	*Goof off*
Work hard	2, 2	0, 3
Goof off	3, 0	1, 1

Q2.

Two people have $10 to divide between themselves. They use the following process to divide the money. Each person names a number of dollars (a non-negative integer), at most equal to 10. If the sum of the amounts that the people name is at most 10 then each person receives the amount of money she names (and the remainder is not used). If the sum of the amounts that the people name exceeds 10 and the amounts named are different then the person who names the smaller amount receives that amount and the other person receives the remaining money. If the sum of the amounts that the people name exceeds 10 and the amounts named are the same then each person receives $5. Find the NE of the game.

Q3.

For the following games represented by the payoff matrices, for each player, determine whether any action is strictly dominated or weakly dominated. Find the NE for the games.

a.

	B	*C*
B	1, 1	0, 0
C	0, 0	0, 0

b.

	B	C
B	$1,1$	$2,0$
C	$0,2$	$2,2$

c.

	L	C	R
T	$0,0$	$1,0$	$1,1$
M	$1,1$	$1,1$	$3,0$
B	$1,1$	$2,1$	$2,2$

Q4.

Two candidates, A and B vie for office. Each of an odd number of citizens may vote for either candidate. Abstention from voting is not allowed. The candidate who obtains the most vote wins. A majority of citizens prefer A to win than B to win. Find all the NE of the game.