Economics 202

Problem Set 10

Normal Form Games

For each of the games below, find the Nash equilibrium (or equilibria). You should assume that each of these games is a simultaneous move game, and that each player has all of the information contained in the game matrix.

1.

(A) \ (B)	U	D
U	A: 10, B: 10	A: 7, B: 4
D	A: 4, B: 7	A: 6, B: 6

2.

(A) \ (B)	L	R
U	A: 10, B: 4	A: 2, B: 3
M	A: 7, B: 4	A: 6, B: 3
D	A: 10, B: 4	A: 1, B: 8

3.

(1) \ (2)	VH	H	M	L
H	1: 10, 2: 0	1: 7, 2: 1	1: 8, 2: 5	1: 20, 2: 9
M	1: 14, 2: 4	1: 1, 2: 2	1: 3, 2: 8	1: 22, 2: 22
L	1: 9, 2: 62	1: 4, 2: 100	1: 6, 2: 1,000	1: 18, 2: 400

4

Bob

Joe \ Bob	Red	Yellow
Blue	J: 7 B: 7	J: 9 B: 8
Green	J: 7 B: 800	J: 7 B: −800

⇒ For games 4 and 7:
Find the NE(s), then determine/discuss the likely outcome if this game were played in an experimental setting.

5

Ford

GM \ Ford	H	M	L
H	G: 800 F: 800	G: 500 F: 700	G: 100 F: 600
M	G: 700 F: 500	G: 600 F: 600	G: 200 F: 500
L	G: 600 F: 100	G: 500 F: 200	G: 300 F: 300

6

Drew

Lewis \ Drew	Mall	Park
Mall	L: 200 D: 200	L: 100 D: 150
Park	L: 150 D: 100	L: 175 D: 175

7

President

Congress \ President	S	V
B1	C: 100 P: −300	C: 0 P: 300
B2	C: 500 P: 100	C: −100 P: 0
B3	C: 200 P: 0	C: 0 P: 0
B4	C: 1000 P: −1000	C: −500 P: 800
B5	C: 300 P: −200	C: 100 P: −100

8

Ted

Bill \ Ted	L	R
L	B: −1000 T: −1000	B: 0 T: 0
R	B: 0 T: 0	B: −1000 T: −1000

Word Problems

9. George Shinn and the New Orleans Hornets are at it again. Last year they left Charlotte, and now they are unhappy in the Crescent City. The team owners have met with leaders from Gotham City, and they are thinking of moving the team to Gotham and renaming the franchise. They would become the Gotham Bats!

   In this question I am asking you to use your knowledge of game theory to analyze what the Hornets' owner will do.

   Assume that George Shinn (the owner of the Hornets) moves first. He can decide to place a "threat to move" or he can decide to "stay in New Orleans". If he keeps the team in New Orleans, then the city of New Orleans can choose to "renovate the existing arena" or it can choose to "do nothing". If the city of New Orleans renovates the Hornets' arena, then the city of New Orleans gets a payoff of (-25) and George Shinn gets a payoff of (100). If the city chooses to do nothing, then the city gets a payoff of (20) and George Shinn gets a payoff of (50).

   If Shinn places a "threat to move" then the city can respond by "building a new arena" or it can "ignore the threat". If the city builds a new arena then the city gets a payoff of (-200), and Shinn gets a payoff of (400). Finally, if the city decides to "ignore the threat", then Shinn may choose to "move to Gotham" or to "stay in New Orleans". If Shinn moves the Hornets to Gotham City, then the owners receive a payoff of (250) and the city receives a payoff of (0). However, if the owners decide to "stay in New Orleans", then the owners receive a payoff of (-20) and the city receives a payoff of (10).

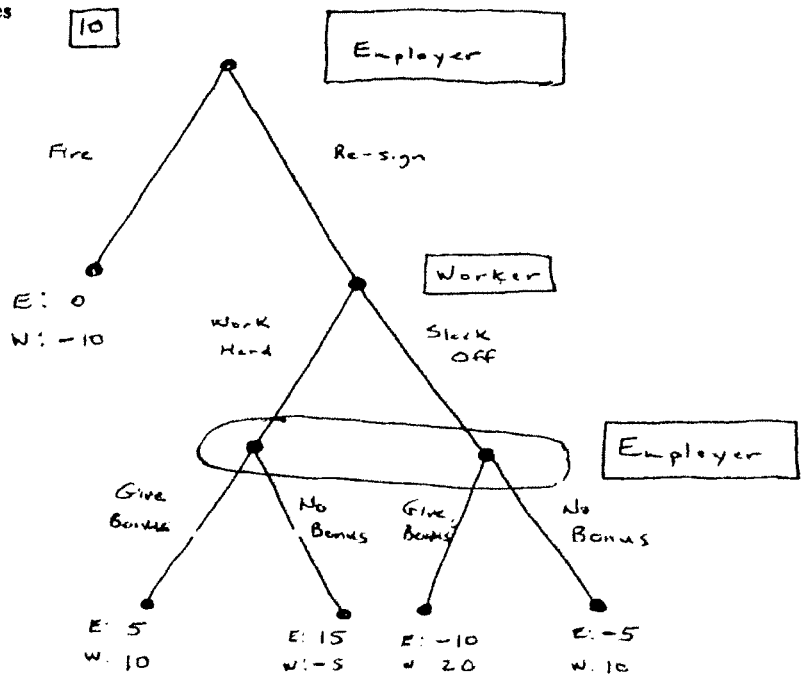
   a. Draw the Extensive Form of this game. Cleary label all decision nodes, players, actions, payoffs, and information sets.

   b. Write down <u>all</u> of the strategies for both players in this game. Create the normal form for this game.

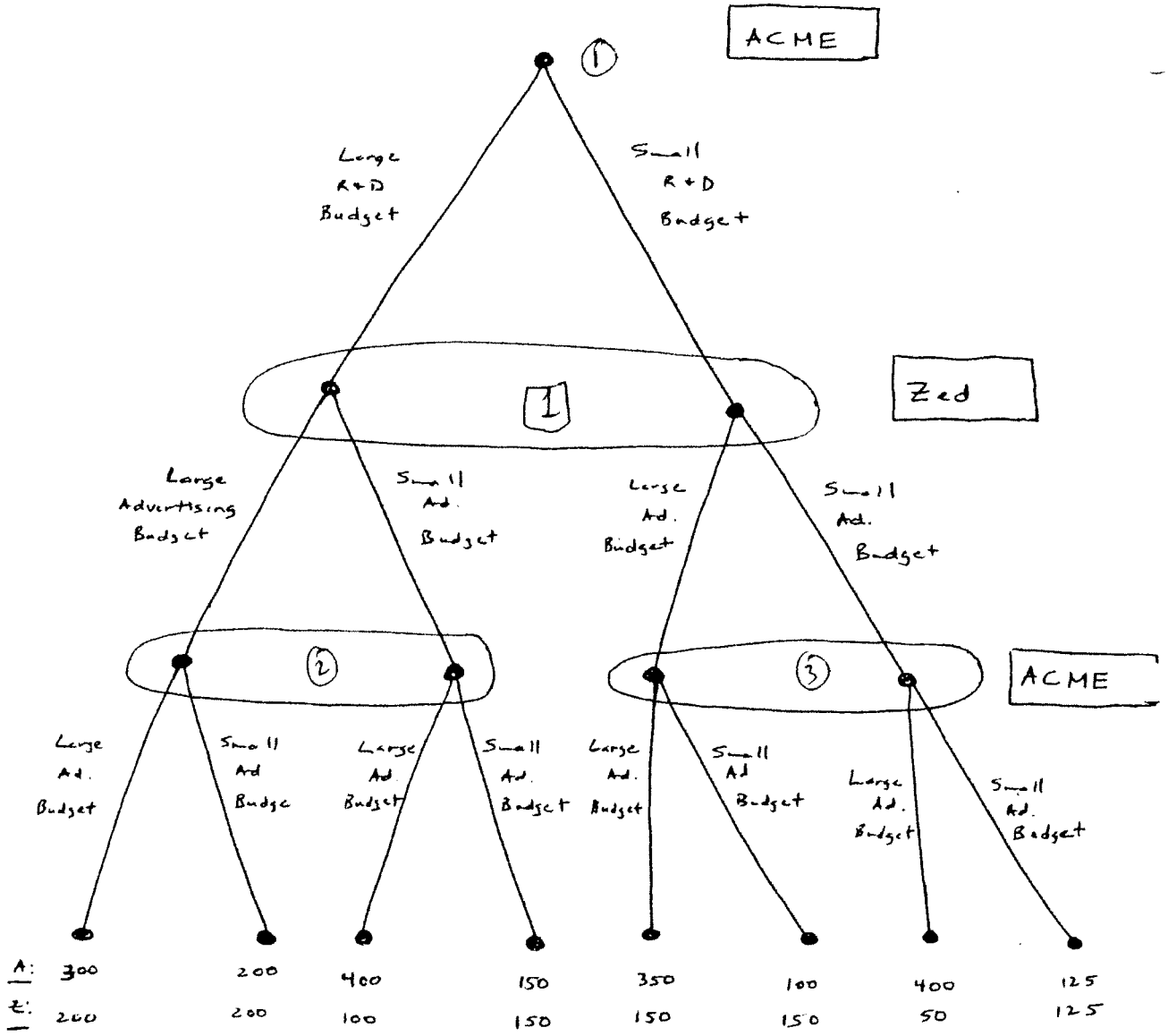
   c. Find the Nash Equilibrium (Equilibria) for this game. If the equilibrium (equilibria) is a subgame perfect Nash Equilbrium, then mention this and explain why this is the case. Briefly explain how you found your Nash Equilibrium (Equilibria).

Extensive Form Games

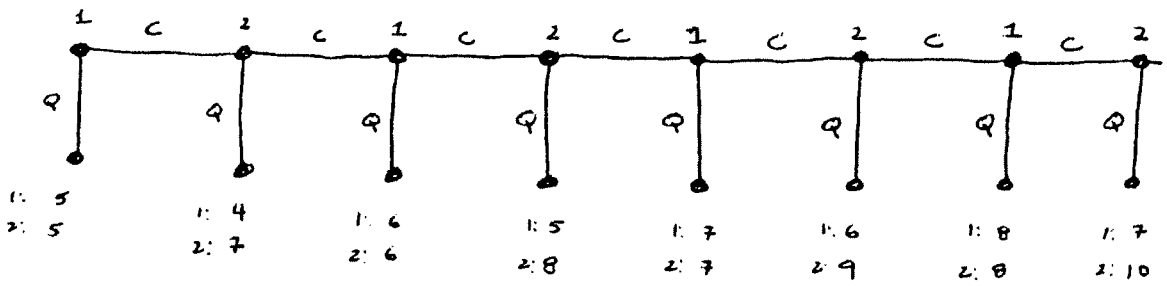
Find the N.E.(s).



[11] Find the N.E.(s)



12 "The Centipede game"



Find the N.E. (s). Is/are the equilibrium/equilibria Subgame Perfect?