Spring 2008 – Chesnes
75 Minutes – 300 Points

Economics 414 – Midterm

Please answer ALL questions on this examination. Be sure to explain any non-standard notation that you use. You must justify your answers to receive full credit. Good luck!

1. **(50%) Consider the following simultaneous move game:**

		Player 2	
		X	**Y**
Player 1	**A**	**(1, 1)**	**(G, 2)**
	B	**(1, 0)**	**(1, 0)**
	C	**(3, 3)**	**(0, 0)**

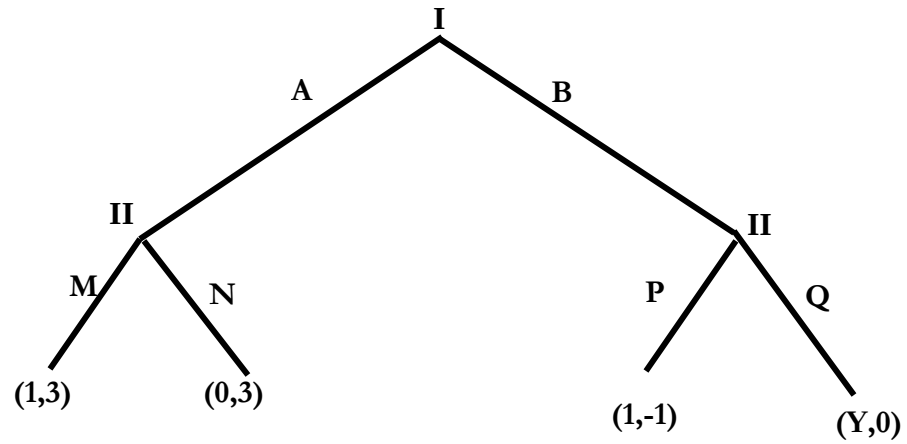
   a. **Define what is meant by a *strict Nash equilibrium*.**

   b. **Suppose player 1 puts weight ½ on her B and C actions. For what values of G does this mixture strictly dominate her action, A ?**

   c. **Suppose G = 0, find ALL Nash Equilibria.**

   d. **Are any of the pure strategy Nash Equilibria you found in part (c) *strict Nash equilibria*? If yes, which ones?**

2. **(25%) Consider the following extensive game:**



Payoffs are denoted (J,K) where J is player I's payoff and K is player II's payoff.

   a. **Write down all possible strategies of each player.**

   b. **How many subgames does the above game have?**

   c. **Solve for the Subgame Perfect Nash Equilibrium of the extensive game when Y = 1.**

   d. **Solve for the Subgame Perfect Nash Equilibrium of the extensive game when Y = 0.**

3. **(25%) Consider the Bertrand model of oligopoly with 2 firms who have the following constant marginal cost:**

$$c_1 = \$1.00 \quad \& \quad c_2 = \$2.00$$

The inverse demand curve is: P(Q) = 100-Q.

   a. **Solve for the Nash Equilibria when firms can only choose prices in increments of one cent ($0.01).**

   b. **Solve for the Nash Equilibria when firms may choose** $p_i \in \Re^+ \text{ for i} = 1,2$ **. In other words, when there is NO smallest increment.**