Whitman College
Econ 328
Exam 3
April 18, 2013

Write all answers in your blue book. Show all of your work in your blue book. The exam ends at noon.

1. Consider the following game.

		Player 2	
		h	d
Player 1	H	0, 0	5, 3
	D	1, 12	4, 6

(a) (5pts) Find all of the Nash equilibria that exist in pure strategies for this game.

(b) (3pts) Define the prisoners' dilemma class of games. Is this game a prisoners' dilemma?

(c) (10pts) Find the Nash equilibrium in mixed strategies for this game, if such an equilibrium exists. In writing mixed strategies, be sure to follow the convention of using p and 1-p to stand for Player 1's randomization, and q and 1-q to stand for Player 2's randomization.

(d) (10pts) Graph the best response functions for each player. Put Player 1's choice of p on the horizontal axis, and Player 2's choice of q on the vertical axis. Be sure to label which best response function belongs to which player. On your graph, indicate all of the pure and mixed strategy Nash equilibria.

(e) (5pts) What are the payoffs in each of the Nash equilibria? Which, if any, of the Nash equilibria are Pareto efficient? Are there any bad Nash in this game?

2. Consider a contractual setting in which the technology of the relationship is given by the partnership game shown below. Suppose that the players contract in a setting of court-imposed breach remedies. The players can write a formal contract specifying the strategy profile they each intend to play. The court observes their behavior in the underlying partnership game and, if one or both of them cheats, imposes a breach transfer. Assume that in the event of a breach, the court could verify which player breached, but the court would **not** know what each player's payoff would have been under the (I, I) outcome. The players wish to support the outcome (I, I). Assume there are no costs to using the court system.

		Player 2	
		I	N
Player 1	I	6, 6	1, 8
	N	9, 2	4, 4

(a) (1pt) Is this partnership game a prisoners' dilemma?

(b) (4pts) Define expectations damages.

(c) (3pts) Can the court impose expectations damages in this case? Explain your answer.

(d) (4pts) Define reliance damages.

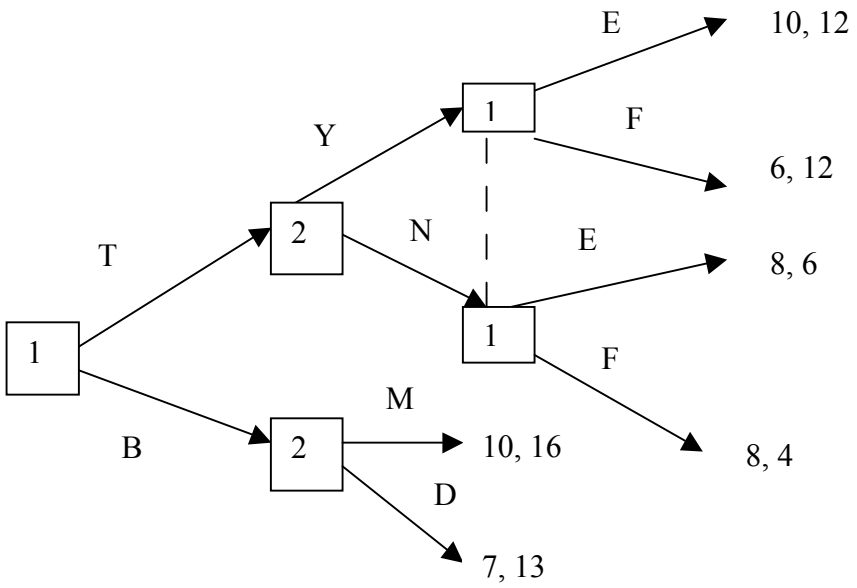
(e) (4pts) Define restitution damages.

(f) (5pts) Can a contract specifying (I, I) be enforced under reliance damages? Explain your answer and show your work.

(g) (5pts) Can a contract specifying (I, I) be enforced under restitution damages? Explain your answer and show your work.

(h) (5pts) Would these players be better off with a court system that imposes reliance damages or restitution damages? Explain your answer.

3. Consider the following extensive-form game.



(a) (10pts) Write the normal form matrix for the game.

(b) (1pt) Is this game a prisoners' dilemma?

(c) (5pts) Use your normal form matrix to compute the pure strategy Nash equilibria of the game. List these Nash equilibrium strategy profiles.

(d) (15pts) Which of the pure strategy Nash equilibria are not subgame perfect? Show and explain your work.

4. The subgame perfect equilibrium (SPE) concept is a refinement of the Nash equilibrium (NE) concept. That is, the SPE takes the set of NE and pares it down to a subset.

(5pts) True or false? If a bad Nash equilibrium exists, the SPE paring process will remove the bad Nash. Thoroughly explain your answer, including providing a definition of a bad Nash.