ECO 4400   Name (Print): _____
Fall 2016
Exam 2
11/16/2016
Time Limit: 115 Minutes

This exam contains 6 short answer questions, 1 longer answer question, and 2 long answer questions. You must complete all short answer and longer answer questions; however, you only need to complete 1 of the long answer questions. Check to see if any pages are missing.

You may *not* use your books or notes on this exam. Calculators are permitted.

You are required to show your work on each problem on this exam. The following rules apply:

- **Organize your work**, in a reasonably neat and coherent way, in the space provided. Work scattered all over the page without a clear ordering will receive very little credit.

- **Show your work**. A correct answer, unsupported by calculations, explanation, or algebraic work will receive no credit; an incorrect answer supported by substantially correct calculations and explanations might still receive partial credit.

- If you need more space, use the back of the pages; clearly indicate when you have done this.

Short Answer Questions: Please answer the following in no more than twenty words each.

1. (6 points) True or False: In a two by two game matrix, there is never a mixed strategy equilibrium when there are two pure strategy Nash equilibria.

2. (6 points) Rationalizability eliminates what type of strategies?

3. (6 points) What is a pooling equilibrium?

4. (6 points) How does acquiring and maintaining a reputation for carrying out threats help a player gain credibility for a strategic move?

5. (6 points) Name two trigger strategies discussed in class.

6. (6 points) For infinitely repeated games, cooperation can be sustained with a low real rate of return on investments. Suppose suddenly there is a probability that the game will end each round. Will this probability decrease or increase the likelihood of cooperation being sustained?

Longer Answer Question: Please answer the following. Be sure to label any graphs.

1. (34 points) (Repeated Games) Suppose the following game is being played.

|		Clearsmooth	
		Advertise	Don't
Glassworks	Advertise	k, k	7, 0
	Don't	0, 7	5, 5

    (a) (10 points) For what values of k is this game a traditional prisoner's dilemma?

(b) (10 points) Suppose these firms play the game for three rounds. The firms are able to invest at a real rate of return of 20%. Will a firm not cooperate in round one, knowing that the other firm will then not cooperate in rounds 2 and 3? Assume k=3.

(c) (14 points) Now let k be a random variable again (i.e. not necessarily equal to 3). Suppose these firms play the game for an infinite amount of rounds. For what range of discount factors is cooperation possible?

Long Answer Questions: Please answer the following. Show all work. Draw graphs where needed. Only answer 1 of the 2 questions.

1. (30 points) (Uncertainty) Draw the following game in a game matrix. Find the Nash equilibrium or equilibria.
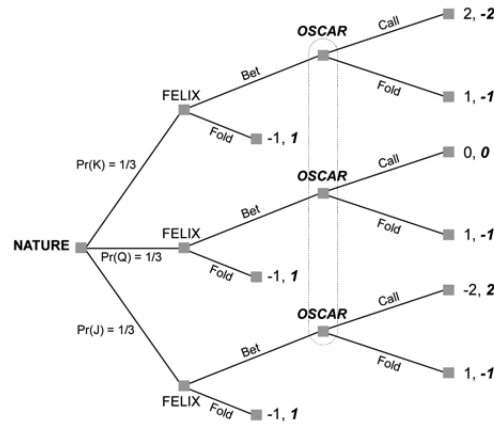
2. (30 points) (Mixed Strategy) Assume that the following game is played. Also, assume that a, b, c, and d are all greater than 0. Finally, assume that there is no pure strategy Nash equilibrium. How would you show that an increase in a will always increase the expected payoff for Rowena. You do not need to explicitly complete the proof; however, you must write the explicit equation you would use to solve this problem. (Hint: Find the mixed strategy equilibrium first)

		COLIN	
		L	R
ROWENA	U	a, −a	b, −b
	D	c, −c	d, −d

Extra Credit: Doodle.