

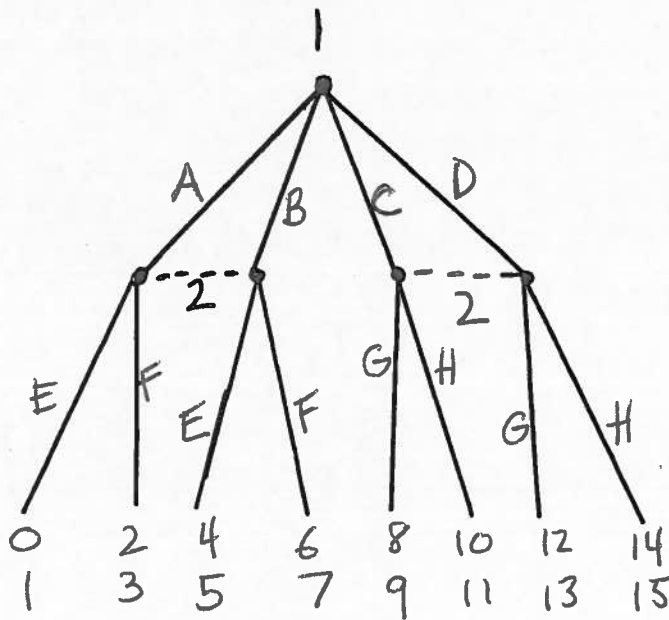
Your Name: _____

The Ohio State University
Department of Economics
First Midterm Examination

Econ 5001
Fall 2016
Prof. James Peck

Directions: Answer all questions, show all work, and label all figures.

1. (20 points) Convert the following extensive form game into normal form, by drawing the payoff matrix, labeling the strategies corresponding to the rows and columns, and filling in the payoffs.



2. (25 points) In the following game, find a strategy of player 2 that is (strictly) dominated. (Remember that a strategy can be dominated by either a pure strategy or a mixed strategy.) Show your work to receive credit.

		player 2		
		L	M	R
player 1	U	2, 4	3, 6	4, 1
	D	4, 4	2, 3	3, 7

3. (25 points) Consider the following game.

		player 2				
		U	V	W	X	Y
player 1	A	7,0	6,1	0,2	2,5	1,1
	B	2,2	5,3	5,4	2,1	5,6
	C	5,2	2,0	5,5	7,0	3,3
	D	4,7	0,1	2,5	4,2	2,5

(a) (15 points) Find all of the (pure strategy) Nash equilibria of this game, and indicate your answer here:

(b) (10 points) Find all of the efficient strategy profiles, and indicate your answer here:

4. (30 points) Two firms engage in Cournot (quantity) competition. For $i = 1, 2$, firm i must choose a nonnegative quantity to produce, q_i . Production is costless, so the payoff to each firm is its revenue. The price in dollars is determined by the inverse demand curve,

$$p = 1200 - 2q_1 - 2q_2.$$

(a) (10 points) Find the best response function for firm 1, which specifies the payoff maximizing q_1 as a function of q_2 .

(b) (10 points) Find the Nash equilibrium of this game.

(c) (10 points) Now suppose that, prior to choosing its quantity, firm 1's lawyers determine that firm 1 could enforce a patent on its product design, which would prevent firm 2 from producing any output. If the cost to firm 1 of protecting its patent is \$90,000, is it in firm 1's interest to do so? In other words, would firm 1 be willing to pay \$90,000 to be a monopolist instead of playing the Cournot game? Show the computations that justify your answer and briefly explain.