

Economics 414 – Midterm

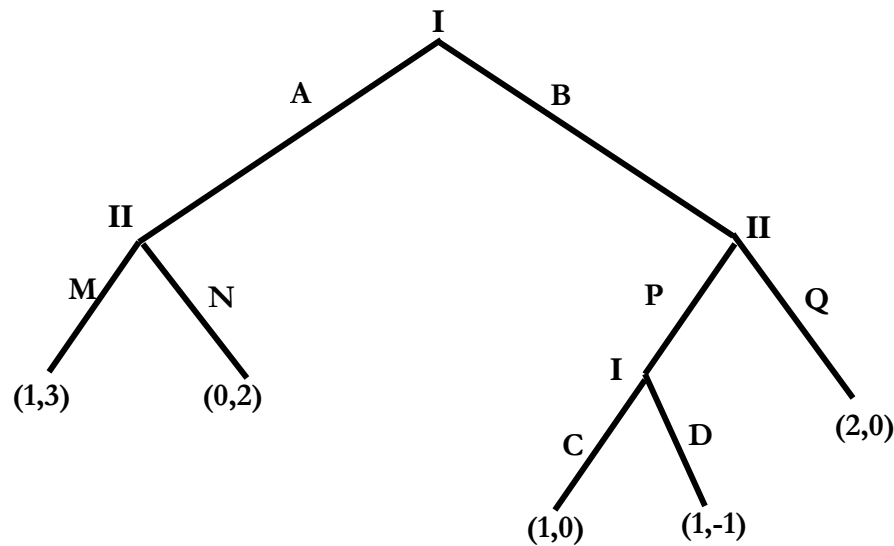
Please answer ALL questions on this examination. Be sure to explain any non-standard notation that you use. You must justify your answers to receive full credit.

1. (35%) Consider the following simultaneous move game:

		Player 2	
		Q	R
Player 1	A	(0, 1)	(8, 2)
	B	(7, 1)	(6, 0)
	C	(8, 3)	(6, 2)

- a. Define what is meant by a *strictly dominated strategy*.
- b. In the game above, determine if either player has a strictly dominated strategy. Be sure to state precisely *how* one or more strategies dominate another.
- c. Find *all* Nash Equilibria of the game above.

2. (35%) Consider the following extensive game:



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

- Write down all possible strategies of each player.
- Solve for the Subgame Perfect Nash Equilibrium of the extensive game.
- In general, explain the difference between Nash Equilibrium and Subgame Perfect Nash Equilibrium. Why is the former insufficient for dynamic games?

3. (30%) Consider 2 oligopolists facing the (inverse) demand curve $P = 12 - Q$, where $Q = q_1 + q_2$. Assume that $C_i(q_i) = q_i^2$ for $i = 1, 2$.

- Assume that firms compete via Stackelberg in quantities with firm 1 moving first. Find the Subgame Perfect Nash Equilibrium.
- Suppose instead that firms are allowed to collude and make their decisions cooperatively at the same time. Find the profits of each firm if they collude.