

## Assignment II

ECON 2020E Intermediate Microeconomics: Producers and Market Structures

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**Notes.** The second assignment is due at the beginning of the last class (6:05 pm on November 29, 2012); failing to hand in Assignment II on time will lead to a grade of FND (failure with no deferred Final examination allowed).

**This assignment contains ten questions. Please answer all the questions.**

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### Question 1 (10 Marks)

#### Payoff Matrix

		Firm B	
		Low	High
Firm A	Low	100 80	125 0
	High	0 65	65 40

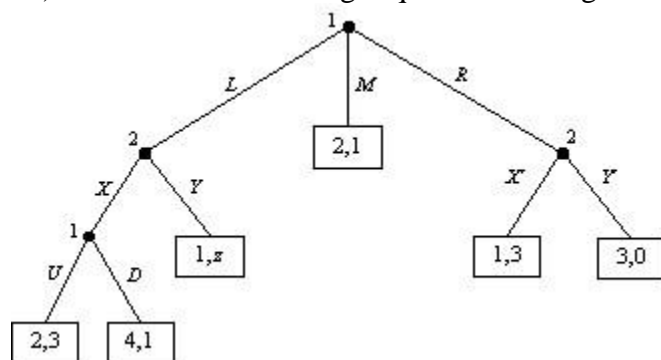
- The above figure shows the payoff matrix for two firms, A and B, selecting an advertising budget. The firms must choose between a high advertising budget and a low advertising budget.
- Find firm A's dominant strategy and firm B's dominant strategy.
  - Find all the pure Nash equilibria.
  - Find the Mixed Strategy Nash Equilibrium.

### Question 2 (5 Marks)

Is it true that : ' If neither firm has a dominant strategy, a Nash equilibrium cannot exist.' ?  
Illustrate in detail the difference between the dominant strategy and pure Nash equilibrium.

**Question 3** (10 marks)

20) Consider the following sequential move game:



If  $z=0$ , find any subgame perfect N.E. (explaining your analysis process clearly and completely)

**Question 4** (5 marks)

For profit-maximizing monopolies, explain why the boundaries on the Lerner Index are 0 and 1.

**Question 5** (5 marks)

Explain why the intersection of the best-response functions is the Cournot equilibrium.

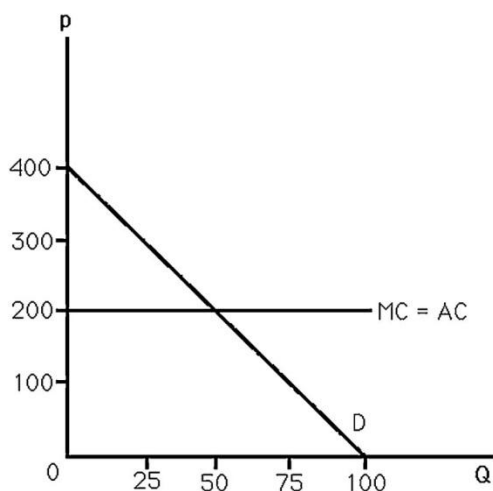
**Question 6** (10 marks)

Is the following statement true or false?

Because firms selling a homogenous product set price in response to the (perceived) pricing decision of other firms in the Bertrand Model of oligopoly in equilibrium price exceeds marginal cost.

**Question 7** (10 marks)

Draw a graph that shows a shift in the demand curve that causes the optimal monopoly price to change, while the quantity remains the same.

**Question 8** (10 marks)

- The above figure shows the demand and cost curves facing a monopoly. Calculate the optimal output for the monopoly.
- Calculate the Lerner Index for the monopoly at the optimal output.

**Question 9** (20 marks)

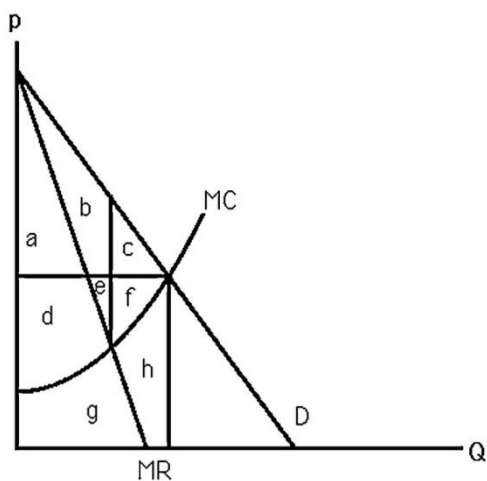
A monopolist faces the inverse demand for its output:

$$p = 30 - Q$$

The monopolist also has a constant marginal and average cost of \$4/unit. The government is seeking ways to collect tax revenue from the monopolist and faces two proposals:

- Impose a specific tax of  $t$  on the monopolist.
  - Impose an ad valorem tax of  $a$  on the monopolist.
- Suppose the government imposes a 20% ad valorem tax on the monopolist. What price and quantity does the monopolist choose and how much revenue does the government generate from the tax?
  - Rather than an ad valorem tax, what is the government's revenue from a specific tax of  $t$  imposed on the monopolist? Your answer should be in terms of ' $t$ '.
  - Show that a specific tax of \$3.70/unit generates the same revenue as a 20% ad valorem tax (approximately).

**Question 10** (15 marks)



- The above figure shows the demand and marginal cost curves for a monopoly. Calculate the deadweight loss of this monopoly.
- Calculate the consumer surplus under monopoly, consumer surplus under perfectly competitive market, producer surplus under monopoly and producer surplus under competitive market. (Be careful about this question, do not be tricked!)