

# Problem Set 4: Due Mar 2/3

## Sample Midterm A

### Section I: Key Terms—Police the Reading

1. What does Partha Dasgupta think Friedrich von Hayek deserved his Nobel Prize?
  - a) he was the first economist to precisely identify and focus on the extraordinary utility of the market as a mechanism for widely and cheaply disseminating important and useful information about the state of the economy to producers and consumers;
  - b) his *Road to Serfdom* famously warned of the dangers of socialism;
  - c) his business-cycle theory was the first to precisely identify and focus on the dangers of overinvestment as the root cause of economic depressions;
  - d) he performed the first comprehensive analysis of natural monopoly and its costs and benefits;
  - e) none of the above.
  
2. What is another name for what FBAH call the “Equilibrium Principle?”
  - a) the “Low-Hanging Fruit Principle”;
  - b) the “No-Cash-Left-on-the-Table Principle”;
  - c) the “Sunk-Cost Principle”;
  - d) the “Income Effect Principle”;
  - e) none of the above.
  
3. What do FBAH mean when they refer to the “hurdle method of price discrimination”?
  - a) selling both inferior and normal goods;
  - b) monopolies that sell more than they should to maximize profits in order to discourage competition;
  - c) the practice by which a seller offers a discount to all buyers who overcome some obstacle;
  - d) investing in increased capacity to lower average fixed costs;
  - e) none of the above.
  
4. What is a “positional arms race”?
  - a) a strategic game between two players where the first mover receives more utility than the second player;
  - b) what occurs when an increase in one person’s performance reduces the expected reward of another’s performance;
  - c) an agreement in which contestants attempt to limit mutually offsetting investments in performance enhancement;
  - d) a series of mutually offsetting investments in performance enhancements that is stimulated by a positional externality;
  - e) none of the above.

**Section II: Key Terms—Police the Concepts**

Explain each of the following in one sentence that convinces your GSI you understand the concept and how it has been used so far in lecture, section, and readings:

1. What is the “willingness to pay” of a consumer?

2. What is “producer surplus”?

3. What is a “first-mover advantage”?

4. What are “increasing returns to scale”?

**Section III: Supply, Demand, and Surplus**

Let's assume that we can treat all automobiles as more or less the same. Suppose demand for cars worldwide is  $P = \$140 - 20Q$ , where  $P$  is the price of cars in thousands of dollars and  $Q$  is the number of cars sold each year in millions. Suppose that cars can be produced at constant returns to scale at a fully-amortized cost of  $P = \$20$ , where  $P$  is the price of cars in thousands of dollars.

1. What is the equilibrium price of a newly-produced car?

2. What is the equilibrium quantity?

3. What is the producer surplus?

4. What is the consumer surplus?

**Section IV: Monopoly**

1. What is a “natural monopoly”?

2. Why is it the case that the market system cannot deliver a sustainable competitive equilibrium in the case of a “natural monopoly”.

3. What, in your view is likely to be the most attractive option for how the government should deal with cases of natural monopoly?

4. Why does this option strike you as more attractive than the other options you can think of?

**Section V: Externalities**

1. Describe the advantages and disadvantages of using taxes and bounties to regulate negative externalities.

2. Describe the advantages and disadvantages of allowing individuals to sue to regulate negative externalities.

**Optional Additional Questions**

1. What do FBAH mean by “variable factor of production”?
  - a) a factor of which the firm is uncertain about how much of it is variable;
  - b) resources available to a firm that are fixed in the short-run but can be varied over time via investment, capacity expansion, and depreciation;
  - c) a factor of production with a price that varies over time;
  - d) resources available to a firm that must be specified and ordered before the current level of demand is known;
  - e) none of the above.
  
2. What are the four kinds of market failure that Partha Dasgupta identifies in his *Economics: A Very Short Introduction*?
  - a) market-power, non-rivalry, macroeconomic, and distributional;
  - b) market-power, network, miscalculation, and macroeconomic;
  - c) non-rivalry, market-power, network, and miscalculation;
  - d) distributional, free-riding, market power, and macroeconomic;
  - e) none of the above.
  
5. What is “diminishing marginal utility”?
  
  
  
  
  
  
  
  
  
  
6. What is “adverse selection”?
  
  
  
  
  
  
  
  
  
  
7. What is the “opportunity cost” of a producer?
  
  
  
  
  
  
  
  
  
  
8. What is an “equilibrium price”?

9. In the 9 counties and more than 101 cities of Greater San Francisco there are 2.5 million households looking for housing. Apartments in San Francisco itself rent for the most. Apartments rent for proportionately less in less-central areas where living is less fun and less convenient. Let's imagine that every one of those 2.5 million households pays the SF market price. Suppose demand is  $P = \$8 - 2 \times Q$  (with  $Q$  in millions of apartments, and  $P$  rental cost in thousands of dollars/month). Suppose supply is  $P = \$1.2 \times Q$  (again with  $Q$  in millions of apartments, and  $P$  rental cost in thousands of dollars/month).

a) What is the equilibrium rental price of apartments?

b) What is the equilibrium quantity?

c) What is the consumer surplus?

d) What is the producer surplus?

10. Suppose PowerCo is a power-plant operating company that runs coal-powered plants and has to decide how many power plants to run. The marginal revenue for power plants is given by  $MR = \$10 - 2Q$ , where  $Q$  is the number of power plants operated and  $MR$  is measured in millions of dollars per year. The marginal cost of operating power plants is given by  $MC = \$2$ , where  $MC$  is measured in millions of dollars per year. Each power plant imposes social costs through increased asthma in the nearby town of Breathville, with total social pollution costs =  $\$4 \times Q$ .

a) How many plants should Powerco run to maximize profit?

b) If the town can successfully sue Powerco as *\*parens patriae\** to recover the social costs of operating power plants, how many power plants will Powerco operate?

c) What is an alternative policy by which the government could cause Powerco to run the socially optimal number of power plants?