

Instructions: (1) Put **your name** on the exam. (2) Put your **TA's** name and section on the exam. (3) You must answer the specified number of questions in each section of the exam. You will *not* get extra credit for answering more than that number of questions (only the first ones will be counted if more than the specified number are answered). (4) To get full credit on answers, you must be clear and rigorous. That is, you should use a graph for most problems, the graph should be clearly LABELLED, and you should interpret the answer in words as well. Be succinct. (5) You cannot get credit unless you write something down. Therefore, give partial answers if you cannot give complete answers.

A. 8-Point Questions: Answer exactly 5 questions in this section. Remember that these are short answer problems: be brief.

- A1 Each week, a department store places a different item of clothing on sale (sets the price below its usual level). The sale item has not been on sale in the recent past. Give an explanation based on price discrimination for why the store may conduct such regular sales.
- A2 Is the World Wide Web (Internet) a public good? Does the government have to provide it? Why or why not?
- A3 In the paper industry, the greater the output, the more pollution produced (and hence the greater the social harm from pollution). Using a graph, show how a price floor can be used to get a perfectly competitive market to produce the socially optimal amount of output. Who gains and who loses from this policy?
- A4 You want to determine whether there is an asymmetric information ("lemons") problem in the market for single-engine airplanes. Can you use any of the following information to help answer this question? If so, how?
- Repair rates for original owner planes versus planes that have been resold.
 - The fraction of planes resold within one year after being purchase.
- A5 Two firms are considering entering a market. They decide whether or not to enter at the same time. If a firm does not enter, it earns zero. If both firms enter, each earns A. If one enters and the other does not, the entering firm earns B. Show the payoff matrix for the two firms. Describe the possible Nash equilibria for this game. (Be sure to discuss how the Nash equilibria may depend on A and B.)
- A6 When the per-unit advertising rate falls, how does a monopoly change the number of units of advertising that it buys? Explain how the firm determines its optimal level of advertising. It may help to use a graph.

B. 12-Point Questions: Answer exactly 2 of the following questions

- B1 Suppose a monopoly book club knows that each consumer has an individual annual demand for books of $Q = 40 - p$, the book club's marginal cost is \$10 per book, the club has no fixed cost. Suppose resale among customers is impossible. Describe a two-part pricing scheme that the book club can implement in order to obtain the largest possible profit (state exact numerical values). How much profit does the firm make on each customer? How much consumer surplus does each customer enjoy?
- B2 What is the incidence on consumers of a specific tax of \$1 per unit if the market supply is perfectly inelastic? [Use a graph to illustrate your answer.] Does whether the tax is collected from firms or consumers?

B3 At Sarah's primary job, she earns \$10 per hour. However, she is not allowed to work more than 8 hours. At a second (moonlighting) job, she can work as many hours as she wants at \$5 an hour. Suppose the wage on her moonlight job rises to \$10 an hour. After this change, Sarah chooses to work 10 hours a day. What can you say about the number of hours a day she worked before the wage increase? Is she necessarily better off now? Why?

C. 12-Point Questions: Answer exactly 1 of the following questions

C1 Many people who live in areas where earthquakes and floods are common do not purchase insurance. One explanation is that they expect to receive aid from the government if a disaster occurs. Suppose an individual is risk averse. Use a single graph to show that person's risk premium (a) without government assistance, and (b) with government assistance. Explain how the possibility of government aid affects this individual's decision about how much, if any, insurance to buy (assuming the rate of insurance is unchanged).

C2 Use a decision tree to illustrate how a risk-neutral plaintiff in a lawsuit decides whether to settle a claim or go to trial. The defendants offer \$50,000 to settle now. If the plaintiff does not settle, the plaintiff believes that the probability of winning at trial is 60%. If the plaintiff wins, the amount awarded is X (if the plaintiff loses, no award is made). How large can X be before the plaintiff decides to settle? How does the plaintiff's attitudes toward risk affect this decision?

D. 12-Point Question: Answer both of the following questions

D1 A duopoly faces a market demand of $p = 200 - Q$. In the following, calculate the output of each firm and the price.

A. Both firms have a constant marginal cost of 20 and there is a Cournot equilibrium.

B. Both firms have a constant marginal cost of 20 and there is a collusive equilibrium (the firms split the market equally).

C. Firm 1 has a constant marginal cost of 20. Firm 2's constant marginal cost is 40. There is a Cournot equilibrium.

D2 You plan to buy a used refrigerator today for \$200 and to sell it in two years (when you graduate) for \$100 (in nominal dollars). The real interest rate is 2%

A. If there is no inflation, what is the true cost (your current outlay minus the resale value in current terms) of the refrigerator to you?

B. If there is a 3% rate of inflation, what is the true cost (your current outlay minus the resale value in current terms) of the refrigerator to you?

Have a good summer!