

**INSTRUCTIONS:**

1. Answer **ONLY** the specified number of questions from the options provided in each section. Do not answer more than the required number of questions. Each section takes one hour.
2. Your answers must be on the paper provided. No more than one answer per page. Do not answer two questions on the same sheet of paper.
3. If you use more than one sheet of paper for a question, write "Page 1 of 2" and "Page 2 of 2."
4. Write **ONLY** on one side of each sheet. Use only pen. Answers in pencil will be disqualified.
5. Write ----- **END** ----- at the end of each answer.
6. Write your exam identification number in the upper right-hand corner of each sheet of paper.
7. Write the question number in the upper right-hand corner of each sheet of paper.

**Section 1: Microeconomic Theory—Answer Any Two Questions.**

**1A.** (Hajikhameneh) Studies show that young married couples (in their early 20's) attend many more movies than older couples (in their 30's and 40's). Use budget lines and indifference curves between movies (depict on the horizontal axis (X)) and all other goods (depict on the vertical axis (Y)) to show how each of the following could explain this difference in consumption patterns:

- a. Incomes tend to increase with age, and movies are an inferior good.
- b. The incomes of old and young are about the same, but their preferences differ.
- c. Movie-going is a time-intensive activity, and older people have higher values of time.

*(Note: Draw a separate diagram for each part, taking care to distinguish the IC's, BC's, and optima of the young vs. the old.)*

**1B.** (Hajikhameneh) The market (inverse) demand function for a homogenous good is  $P(Q) = 10 - Q$ . There are three firms: firm 1 and 2 each have a total cost of  $C_i(q_i) = 4q_i$  for  $i \in \{1,2\}$ . and firm 3 has a total cost of  $C_3(q_3) = 2q_3$ . The three firms compete by setting their quantities of production, and the price of the good is determined by a market demand function given the total quantity. Calculate the Nash equilibrium in this game and the corresponding market price.

(over)

**1C.** (Liu) Suppose that the monopolist faces the demand functions:

$$P_1 = 100 - Q_1$$

$$P_2 = 40 - Q_2$$

and that the cost function is  $C = 20(Q_1 + Q_2)$ .

**a.** How much should be sold in the two markets to maximize total profit? What are the corresponding prices?

**b.** What is the monopolist's pricing strategy if it becomes illegal to discriminate?

**c.** Discuss the consequences of imposing a tax of 2 per unit on the product sold in market 1.