Microeconomics In-class Quiz 3
Spring 2025

Student ID:

Name:

Instructions

1. Do NOT flip over this page until every student receives this quiz. Your TA will let you know when you can start.
2. During this closed-book quiz, you cannot consult any materials.
3. It is okay to write your reasoning in Korean.
4. There are five questions in total. Both sides are printed, so make sure you check the backside of each page.
5. [**IMPORTANT**] Make your answers **legible**. Clearly delineate your scratches from your answers. Deducted points due to illegible writing cannot be the reason for reevaluation.

Honor Code: Cheating on exams or quizzes, plagiarizing someone else's answers as one's own, or any other instance of academic dishonesty violates the standards of academic integrity.

Confidentiality Code: Sharing the information of the exam or quiz contents with other students in any form and medium is strongly prohibited, as it raises information inequity.

I, _____, consent to the Honor Code and the Confidentiality Code.
(write your name)

1. A famous museum plans to have a special exhibition event. The event manager estimates the demand for Adults to be $q^{Ad} = 600 - 10p$, and demand for Students to be $q^{St} = 900 - 20p$. The manager considers charging different entry fees for two groups. The marginal cost of additional visitor is 10.

(a) [1 point] Derive the inverse demand functions for Adults and Students, and the marginal revenue functions for them.

(b) [1 point] Find the profit-maximizing price and ticket sales for each group.

(c) [2 points] The government mandates that the museum has to charge the same price for everyone. The aggregate demand is given as follows:

$$Q = \begin{cases} 1500 - 30p & \text{if } p \leq 45 \\ 600 - 10P & \text{if } p > 45 \end{cases}$$

In this situation, find the profit-maximizing price and sales.

2. Bobby and Gary play a simultaneous-move game described as follows:

		Gary		
		Left	Center	Right
Bobby	High	4, 4	7, 5	5, 2
	Middle	8, 3	2, 4	1, 12
	Low	10, 6	9, 1	4, 3

(a) [1 point] What would be Gary's payoffs when Bobby plays Middle and Gary plays Right?

(b) [1 point] Check whether there are strictly dominant strategies in this game. If so, describe them.

(c) [1 point] Is the game dominance solvable, i.e, can you find a unique pair of actions that survives after iterative removal of strictly dominated strategies? If so, describe the action profile. If not, explain why this game is not dominance solvable.

3. [1 point each] Examine if there are pure-strategy Nash equilibria in each game, and if so, describe them all.

(a)		Jada	
		Starbucks	CoffeeBean
Will	Starbucks	5, 5	1, 2
	CoffeeBean	3, 2	6, 6

(b)		Biggie	
		Diss	Chill
2Pac	Diss	0, 0	4, 2
	Chill	2, 4	3, 3

(c)		Choo	
		Swing Early	Swing Late
Ryu	Fastball	40, 60	90, 10
	Changeup	70, 30	25, 75

(d)		FM 89.1		
		Trot	Pop	Metal
FM 91.9	Trot	2, 4	5, 1	4, 5
	Pop	4, 7	4, 5	2, 6
	Metal	5, 5	8, 6	3, 3

4. Hyundai Motors (H) offers two versions of SUVs: Hyundai Palisade and Genesis GV80. Assume that there are no other firms selling SUVs in this region. There are two equally-populated types—Budget and Luxury—of consumers, and their willingness to pay for two car models are as follows:

	Palisade	GV80
Budget consumer	\$52,000	\$58,000
Luxury consumer	\$56,000	\$80,000

H wants to sell GV80 to luxury consumers and Palisade to budget consumers.

(a) [1 point] If H charges \$52,000 for Palisade and \$73,000 for GV80, would this pricing scheme be incentive compatible?

(b) [1 point] If H charges \$50,000 for Palisade and \$75,000 for GV80, would this pricing scheme be incentive compatible?

(c) [1 point] If the price for Palisade is fixed at \$48,000, what would be the highest price for GV80? Assume that if a luxury consumer is indifferent between two SUVs, she chooses GV80.

5. The platypus오리너구리 is known to be very hard to breed. But two breeders, Sydney and Adelaide, have discovered the secret to platypus fertility and cornered장악했다 the market. The inverse demand for baby platypuses is given by $P = 1000 - 2Q$, where Q is the sum of Sydney's output, q_s, and Adelaide's output, q_a. It is known that the marginal cost of raising a baby platypus is \$40 for each breeder.

(a) [2 points] Given that Adelaide's production level q_a, find the best response function (reaction curve) of Sydney.

(b) [2 points] Describe a Nash equilibrium when two breeders decide the output level simultaneously. What would be the aggregate quantity in the equilibrium?

(c) [2 points] Consider a sequential-move game where Sydney decides the output level first, and then Adelaide's decision follows. What would be the aggregate quantity in the Subgame-Perfect Equilibrium?

(d) [2 points] If Sydney becomes a monopolist, as Adelaide got retired, what would be the output level in this platypus economy? Compare your answer in this part with that in (b).