Microeconomics II

July 3, 2025
Duration: 60m+40m

Special Period Exam

Full name: .....

Student number: ..... Class: .....

1. This exam consists of two parts. Part A consists of 16 multiple-choice questions and is worth 10 points. Part B consists of 2 open questions and is also worth 10 points.
2. Part A must be completed in 60 minutes and Part B in the remaining 40 minutes.
3. Indicate your answers to part A with an "X" in the table below. Each correct answer is worth 10/16 (= 0.625) points and each wrong answer is penalized by (10/16) /3 ($\approx$ 0.210) points.
4. Any kind of consultation is not allowed.
5. Turn off mobile phones, computers, tablets, and smartwatches. Their use will be considered fraud. The use of a non-graphical calculator is allowed.
6. Write your full name and student number on every answer sheet.
7. Return this answer sheet even if you withdraw from the exam.

ANSWER TABLE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
a	a	a	a	a	a	a	a	a	a	a	a	a	a	a	a
b	b	b	b	b	b	b	b	b	b	b	b	b	b	b	b
c	c	c	c	c	c	c	c	c	c	c	c	c	c	c	c
d	d	d	d	d	d	d	d	d	d	d	d	d	d	d	d

English – Version A

PART A
MULTIPLE CHOICE (10 points / 60 min)

1. In case both positive and negative externalities are present, the socially optimal amount of production takes place when

a. Social marginal benefit is equal to private marginal cost
b. Private marginal benefit is equal to social marginal cost
c. private total benefit is equal to private total cost
d. Social marginal benefit is equal to social marginal cost

2. In case the government wants to implement a Pigouvian tax to address a negative externality, the government needs to know

a. The social marginal cost at the socially optimal quantity
b. The social marginal cost at the privately optimal quantity
c. The external marginal cost at the socially optimal quantity
d. The external marginal cost at the privately optimal quantity

3. Fil in the blanks. If Jon is risk _____ he would strictly prefer _____ insurance at an actuarily fair premium above _____ insurance at an actuarily fair premium.

a. averse; full; partial
b. averse; partial; full
c. neutral; partial; full
d. seeking; full; partial

4. Which of the following statements is false?

a. Actuarily fair insurance reduces risk without changing the expected value of a gamble.
b. The risk premium is negative for risk averse individuals.
c. One potential explanation for individuals gambling at the casino is that they are risk seeking.
d. Risk aversion implies that an individual has diminishing marginal utility of wealth/money.

5. There are 100 bikes for sale in a town, of which 40 are low quality and 60 are high quality. All buyers are willing to pay €50 for a low-quality bike and €100 for a high-quality bike. The sellers are willing to accept at least €40 for a low-quality bike and €70 for a high-quality bike. Buyers are risk neutral and cannot see which bike is low- or high-quality. What is the equilibrium price for the low-quality bike?

a. €40
b. Between €40 and €50
c. €50
d. Between €70 and €80

6. Consider that employers in a labour market are observed to pay lower average wages to members of a minority group, even though they claim to treat all applicants equally. How may this wage gap be explained by statistical discrimination rather than taste-based discrimination?

a. Employers personally dislike members of the minority group and are willing to pay a cost to avoid hiring them.
b. Employers believe that on average, members of the minority group have lower productivity, even if that is not true for all individuals.
c. Employers are required by law to set different wages for different groups.
d. Employers believe in affirmative action and adjust wages downward to account for subsidies.

7. A monopolist faces a market with many identical consumers whose demand function is given by $Q = 10 - p$. The monopoly has constant marginal costs of 2 and no fixed costs. The monopoly uses a two-part tariff pricing strategy. What is the optimal per-unit price and fixed fee that maximizes the monopolist's profit?

a. Set per-unit price at 2 and fixed fee at 64.
b. Set per-unit price at 5 and fixed fee at 40.
c. Set per-unit price at 10 and fixed fee at 0.
d. Set per-unit price at 2 and fixed fee at 32.

8. Fill in the blanks. A _____ monopoly is defined as a firm that faces an average cost curve _____ at _____ output quantities

a. natural; decreasing; all
b. natural; increasing; some
c. technological; decreasing; some
d. technological; increasing; all

9. Consider the following payoff matrix of a game with two players, A and B. The first number in each cell is the payoff to Player A, and the second number is the payoff to Player B.

		Player B	
		Left	*Right*
Player A	*Up*	2,2	0,3
	Down	3,0	1,1

What is the Nash equilibrium in pure strategies?

a. A up; B left
b. A up; B right
c. A down; B left
d. A down, B right

10. Which of the following statements is false?

a. Every subgame perfect equilibrium is a Nash equilibrium but not every Nash equilibrium is a subgame perfect equilibrium.
b. If all players in a game have a dominant strategy, then there can only be one pure strategy Nash equilibrium to the game.
c. In a sequential game, a non-credible threat will not be part of any subgame perfect Nash equilibrium.
d. Suppose a player in a sequential game has 5 potential decision nodes, with 2 possible actions at each node, then he has 10 possible pure strategies.

11. A duopoly market faces the inverse demand curve $p = 75 - Q$. Both firms have a constant marginal cost of 0, and a fixed cost of 5. What quantity does each firm sell in a Cournot equilibrium?

a. 25
b. 35
c. 75
d. 54

12. Two identical firms produce a homogeneous good with constant marginal costs. The market demand is linear and downwards sloping. There are two opposing models to discuss the competition between these two firms: Cournot versus Bertrand. Which of the following statements is correct?

a. In both models, the equilibrium price equals marginal cost, and firms earn zero economic profit.
b. In Cournot competition, firms earn positive profits in equilibrium, while in Bertrand competition, the equilibrium price equals marginal cost and profits are zero.
c. In Bertrand competition, each firm sets price equal to the monopoly price to avoid undercutting, leading to positive profits.
d. In Cournot competition, the price is lower than in Bertrand competition due to strategic quantity-setting behaviour.

13. Fill in the blanks. Product differentiation among oligopoly firms _____ overlap in customer base, thereby_____ the price competition and _____ market power.

a. increases; increasing; reducing
b. increases; decreasing; increasing
c. decreases; increasing, reducing
d. decreases; decreasing; increasing

14. In Bertrand's model of competition with two identical firms and homogeneous goods, we can state that:

a. The best response functions of companies intersect at the level of marginal cost.
b. Firms' best-response functions intersect above marginal cost.
c. The best-response functions of companies do not intersect.
d. Firms' best-response functions intersect at values higher than the marginal cost.

15. In a differentiated product market described by a circle, firms enter the market at the first stage and decide on the price at the second stage. In the subgame perfect Nash equilibrium of this game:

a. As more firms enter the market, each firm's market power decreases, and prices tend to converge toward marginal cost.
b. As more firms enter the market, each firm's market power increases, and prices tend to diverge from marginal cost.
c. The first firm to enter the market becomes the most efficient due to its first-mover advantage.
d. Entry costs ensure that all firms earn zero profits regardless of the number of entrants.

16. Fill in the blanks. Lindahl pricing leads to an _____ level of provision of a pure public good. The determination of this provision level depends on individuals truthfully reporting their _____. However, if individuals have incentives to _____ , the resulting market equilibrium becomes inefficient.

a. efficient; willingness to pay; underreport
b. excessive; willingness to pay; overreport
c. inefficient; willingness to receive; overreport
d. efficient; willingness to receive; report the average value

PART B
OPEN QUESTIONS (10 points / 40 min)

Question 1.

Consider a monopolist whose cost function is given by $c(q) = 20 + 3q$. This monopolist operates in two geographically distinct markets, where resale is not possible. The demand functions in each market are given by: $p_1 = 10 - 0.5q_1$ and $p_2 = 15 - 1.5q_2$.

a. Determine the profit-maximizing quantities and prices in both markets, assuming the monopoly can ask a separate price in each of the two markets. That is, the firm can charge a separate price in markets 1 and 2, but all consumers within a given market pay the same price. [1.5p]

b. Calculate the price elasticity of demand in both markets at the equilibrium quantities found in question a. Subsequently, without computing profits, explain in which market the firm earns a higher profit. [1.5p]

c. Now suppose there is only one market with demand given by $q = 60 - 2p$. Suppose the firm can identify each consumer's willingness to pay. What pricing strategy should the firm use? What is the value of the consumer surplus and of the profit (note: in this case, profit ≠ producer surplus)? [2p]

Question 2.

Consider a small town with two mobile phone repair shops. Each shop chooses both a price and a product characteristic. The product characteristic refers to the speed of service, which can take any value between 0 (slow) and 1 (fast). Consumers differ in their preferences for repair speed and are uniformly distributed along this interval. The utility consumers derive depends on both the price and how closely the service speed matches their preferred speed.

a. Suppose the government introduces regulation that fixes the price of phone repairs as it wants all citizens to have a working phone. This implies the two shops can only compete on service speed. What is the equilibrium outcome in terms of service speed? Justify your answer. [1.5p]

b. A new government abolishes price controls, allowing the shops to compete both on price and service speed. Explain intuitively why, in this setting, the two shops may choose maximum differentiation in service speed as an equilibrium strategy. [1.5p]

c. Now consider a large city with many phone repair shops, each offering slightly different service speeds. The market can be described as monopolistically competitive: each shop faces a downward-sloping demand curve and acts as a monopolist over its niche. Explain the following apparent paradox: "In long-run equilibrium, incumbent firms may enjoy positive economic profits, while potential entrants face zero or even negative expected profits." Use a graph to support your explanation. [2p]

Question 1

a. For market 1: TR=(10-0.5*q1)*q1, so MR=10-q1. MC=3. Max profits implies MR=MC, and so q1=7 and p1=6.5.
For market 2: TR=(15-1.5*q2)*q2, so MR=15-3q2. MC=3. Max profits implies MR=MC, and so q2=4 and p2=9.

b. Elasticity of demand = (dq/dp)*(p/q).
For market 1: elasticity = -2 * (6.5/7)=-.1.857
For market 2: elasticity = -(1/1.5)*(9/4)=-1.5
Elasticity of demand in market 2 is lower, hence the firm can set a higher price and make more profits in market 2.

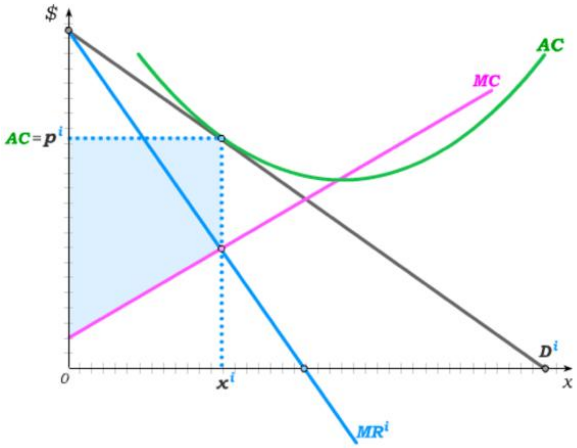
c. The pricing strategy should be first-degree price discrimination: each consumer would pay a different price, equal to their willingness to pay. The firm would sell until WTP is at MC, which happens at q=54. In this case, the consumer surplus is thus zero. Moreover, profit = producer surplus – fixed cost. The producer surplus is (30-3)*54*.5=729. Hence, profit =729-20=709.

Question 2

a. This situation is a Hotelling location model with fixed prices and horizontal differentiation. The Nash equilibrium in this case occurs when both shops locate at the centre, i.e., speed service = 0.5.

b. In short, the two shops can soften price competition by differentiating their products. Greater differentiation reduces the overlap in customer bases, which allows each shop to raise prices above marginal cost and earn positive profits.

c. Incumbent firms (existing shops) may still earn positive profits, while potential entrants face zero or negative profits, due to the presence of fixed costs. These fixed costs are sunk for incumbents, but relevant to potential entrants. This implies that economic profits for the incumbent considers marginal costs, whereas the economic profit for the entrant considers average costs. The first can be positive, whereas the latter is zero (or negative). See the graph below for an illustration.


$
AC
MC
AC=p^i
D^i
0
x^i
x
MR^i