

Repeat Exam

Part A — 20 minutes (7.5 marks)

You get 0.75 marks for each right answer and a 0.75/3 (0.25) deduction for each wrong answer. If you want to leave a question unanswered, don't check any answer or (say, if you have already checked one) check "I do not wish to answer this question."

1. There are no losses in the long-run equilibrium in a monopolistically competitive industry because:
 - a) Firms have enough market power to always achieve profit.
 - b) Free entry and exit means loss-making firms will exit the market.
 - c) Free entry ensures a critical mass of firms that will attract enough consumers.
 - d) Firms are able to build consumer loyalty.
2. In the long-run equilibrium in a monopolistically competitive industry, firms have:
 - a) Marginal cost < average cost.
 - b) Marginal cost = average cost.
 - c) Marginal cost > average cost.
 - d) Any of the other alternatives is possible.
3. For the quantities that maximise the cartel's profit:
 - a) Firm's individual marginal revenues must be equal.
 - b) The cartel's joint marginal revenue equals the average of the firm's individual marginal revenues.
 - c) Each firm's individual marginal revenue exceeds the cartel's joint marginal revenue.
 - d) None of the other alternatives is correct.
4. In the Cournot model, if a firm's marginal cost increases (its marginal cost curve shifts up), its reaction function will:
 - a) Shift leftwards (or inwards).
 - b) Remain unchanged.
 - c) Shift outwards.
 - d) Any of the other alternatives is possible.
5. If no player has a dominant strategy:
 - a) There will be a prisoners' dilemma.
 - b) There will be no Nash equilibrium.
 - c) There will be at least one Nash equilibrium.
 - d) None of the other alternatives is correct.
6. There is moral hazard if:
 - a) Someone buys life insurance and then engages in riskier behaviour.
 - b) The insurance company sells life insurance not knowing that the insured has a riskier lifestyle than the average risk the company based the insurance premium on.
 - c) There are several weight-loss pills on the market, but consumers cannot tell the effective from the ineffective ones.
 - d) None of the other alternatives is correct.
7. If the social marginal cost of a good exceeds the private marginal cost then:
 - a) Equilibrium output will be inefficiently high.
 - b) The equilibrium price will exceed the socially optimal price.
 - c) Insufficient resources will be allocated to production of the good.
 - d) A government subsidy would improve efficiency.

8. Consider an adverse selection situation in a market where good- and bad-quality products are sold at the same price because consumers cannot tell the quality before the purchase. Which of the following best explains Pareto inefficiency in this market?
- Some consumers pay more than what the good is worth to them.
 - Good-quality sellers are harmed relative to the bad-quality sellers.
 - Some consumers pay more than what the good is worth to them, and good-quality sellers are harmed relative to the bad-quality sellers.
 - None of the other answers explains Pareto inefficiency in this market.
9. The Pareto-efficient quantity of a public good is such that its marginal cost equals :
- None of the other alternatives is correct.
 - Each consumer's marginal benefit.
 - The sum of all consumers' marginal benefits.
 - The average of all consumers' marginal benefits.
10. A risk lover will:
- All other alternatives are correct.
 - Be willing to play a fair bet.
 - Prefer a lottery to its expected value.
 - Have a convex utility function from wealth.

Part B — 35 minutes (7.5 marks)

Each question in Part B is independent from the others and carries 2.5 marks. Do not use mathematical symbols in your answers. For instance, to indicate firm 1's profit, write Profit₁ = x.

- A monopolist has the cost function $c(Y) = 10Y$. It sells to two markets with demand curves $y_1 = 60 - 2p_1$ and $y_2 = 35 - 0.5p_2$, and is able to charge a different price in each market. State the condition for profit maximization in terms of marginal cost and marginal revenue and explain why that condition must be met. Find the profit-maximising quantities and prices and explain your reasoning and the main steps you followed (but you do not need to show all calculations).
- In a certain duopoly, if firms compete according to the Cournot model, equilibrium quantities are $y_1 = 9$ and $y_2 = 7$. Characterise the Cournot equilibrium, that is, what does it mean for those values to be a Cournot equilibrium (you are not being asked to explain how you would find the equilibrium). How would the equilibrium quantities qualitatively change if firms competed according to the Stackelberg model instead, with firm 1 the leader? Explain why firms would find it profitable to change their quantities relative to the Cournot equilibrium (again, you are not being asked to explain how you would find the Stackelberg equilibrium).
- An individual maximises expected utility, and his utility from wealth is given by the function $U(w)$ below. His initial wealth consists of shares now valued at €900. This value can drop by €800 with 50% probability or remain unchanged with the remaining 50% probability. Find the maximum price the individual would be willing to pay for full insurance against the loss. Explain your reasoning. Simply by comparing the value you found with the expected value of the loss, what can you conclude about the individual's attitude towards risk? Explain.

Part C — 25 minutes (5 marks)

Each question in Part C is independent from the other and carries 2.5 marks. Do not use mathematical symbols in your answers. For instance, to indicate firm 1's profit, write Profit₁ = x.

- Explain the conditions for profit maximisation by a monopoly and a perfectly competitive firm Pareto efficient. Compare and explain the market outcomes in what respects quantity sold, price charged and Pareto efficiency.
- Critically discuss in detail the following statement: "Where there are externalities, if property rights are unambiguous and the parties can negotiate without costs, the Coase theorem shows that the allocation of property rights bears no consequence on the socially optimal quantity or on the distribution of benefits between the parties."

Answers to Part A

1	2	3	4	5	6	7	8	9	10
b	a	c	a	d	a	a	d	c	a

Note on Q3. Imagine a cartel with firms A and B. Firm A's individual marginal revenue is the effect on its own revenue when it sells one more unit: the revenue increases because one more unit is sold and fall because the price falls. The cartel's joint marginal revenue includes this effect plus the effect on firm B's revenue, which is negative — firm B's revenue fall because the price fall. So A's individual marginal revenue exceeds the cartel's joint marginal revenue. The same is true when B sells one more unit. (This is the reason firms at the cartel's optimal have a temptation to increase output if they believe the other will not retaliate.)

Note on Q8. There is Pareto inefficiency only if there are potential mutually beneficial transactions that do not take place. For instance, imagine there are some sellers willing to accept €10 for a good-quality good, and some consumers willing to pay €11 if they knew the good was good quality, but if buyers can't tell the quality and won't pay more than €7 (or any amount below €10) then those goods will not be traded, and a potential benefit will go to waste. If all goods are traded there is no inefficiency.

Answers to Part B

- Marginal revenues must be equal in both markets: otherwise the monopolist could increase revenue by diverting sales from the low marginal revenue market to the high marginal revenue market, while keeping total quantity, and hence total cost, the same. The marginal revenues (MR) must also equal the marginal cost (MC) for the usual reason. $MC = 10$ (it is constant), so it must be $MR_1 = MR_2 = 10$. The inverse demand curves are $p_1 = 30 - 0.5y_1$ and $p_2 = 70 - 2y_2$. Marginal revenues: $MR_1 = 30 - y_1 = 10 \Leftrightarrow y_1 = 20$; $MR_2 = 70 - 4y_2 = 10 \Leftrightarrow y_2 = 15$. From the inverse demand curves, $p_1 = 20$ and $p_2 = 40$.
- If $y_1 = 9$ and $y_2 = 7$ make a Cournot equilibrium, then $y_1 = 9$ maximises firm 1's profit given $y_2 = 7$, and vice versa. This means that given the other firm's output, no firm would want to change its own. In a Stackelberg equilibrium, the leader would produce more, and the follower less than in Cournot. The reason is as follows. In the Cournot model, decisions are simultaneous, meaning firm 1 cannot influence firm 2's output and must regard it as a constant. But in the Stackelberg model, firm 1, the leader, decides first, and so if it increases its output it knows firm 2, the follower will respond by decreasing its own (whereas in the Cournot model it would not); so total quantity will increase by less than it would in Cournot; so price will fall by less as well, making firm 1's marginal revenue higher than it would be in Cournot, as so making it profitable for firm 1 to increase output relative to what it would produce in the Cournot model.
- With no insurance the individual has expected utility $EU = 0.5U(900) + 0.5U(900 - 800) = 0.5 \times 30 + 0.5 \times 10 = 20$. The individual will be willing to take full insurance as long as he gets at least the same utility. With full insurance and premium p , the individual's wealth is $900 - p$ whether the loss occurs or not, and his utility is $U(900 - p) = 20 \Leftrightarrow 900 - p = 400 \Leftrightarrow p = 500$. This is the highest premium the individual would accept to pay, making him indifferent between taking or not taking the insurance; if $p < 500$, the individual prefers insurance. This means the individual is willing to pay up to 500 to insure against a loss with expected loss $0.5 \times 800 = 400$, so he is willing to see his expected wealth reduced in order to eliminate the risk, meaning he risk averse.

Answers to Part C

- In both case the firm equates marginal revenue. In perfect competition the firm has no impact on price, so this is constant from the firm's point of view, so marginal revenue equals the price; this means marginal cost equal to price, leading to Pareto efficiency: producers will produce and sell any unit such as long as the consumer is willing to pay the marginal cost. In a monopoly, the firm faces the market demand curve, so the more it sell the lower the price is, making marginal revenue lower than the price, which means the monopolist produces only up to the point where marginal cost equals marginal revenue, which is lower than the price. This means consumers would be willing to pay more than the marginal cost of additional units, but the monopolist will not produce them, so the outcome is not Pareto efficient. It follows from the exposition above the monopolist produces less and charges a higher price than an perfectly competitive industry.
- The Coase theorem shows that in the stated conditions a Pareto-efficient outcome will be achieved. For the sake of clarity, assume one A's output as some effect on B. As long as total benefits can be increased by

changing A's output (as negotiations are costless and there is no litigation as to who has the "property rights", i.e. who is entitled to decide the output level, whether A or B), the parties should agree to change the output level and share the extra benefits. Property rights effect distribution of benefits though. Suppose A in our example has the property rights. The it could just set its private optimal level, ignoring B; B would then have to pay A for it to change its output level. If it was B who had the property rights it would be the other way round: A would have to pay B to get B to agree to whatever A wanted to produce. The socially optimal will not depend on who has the property rights only if preferences are quasi-linear, as in the case of two firms interested only in maximising profit.