

Industrial Economics – Special Period Exam

ISEG Lisbon

2025/26

Duration: 100 minutes

Full name:

Student number:

Instructions

1. This exam consists of multiple-choice questions and analytical exercises.
2. There is only one correct answer to each multiple-choice question.
3. A correct answer is worth 1 point, an incorrect answer is worth -0.5 points, and no answer is worth 0 points.
4. Fill in the answer grid below for the multiple-choice questions, on which the corresponding evaluation is based.
5. Write clearly and readably. If the evaluator is not able to read your hand-writing, it is your fault.
6. The use of mobile phones, computers, tablets, and smartwatches is not allowed.
7. The use of a non-graphical calculator is allowed.
8. Write your full name and student number on every answer sheet.
9. Return this answer sheet even if you withdraw from the exam.

Answer Grid (multiple choice questions)

	1	2	3	4	5	6	7
a	☐	☐	☐	☐	☐	☐	☐
b	☐	☐	☐	☐	☐	☐	☐
c	☐	☐	☐	☐	☐	☐	☐
d	☐	☐	☐	☐	☐	☐	☐

Part 1 – Multiple Choice Questions (7 points)

Only one answer is correct for each question.

1. The “Cellophane fallacy” (from *US v. DuPont*, 1956) is the risk that, when the SSNIP (hypothetical monopolist) test is applied at a price that is *already* at the monopoly level, the relevant market is:
 - a. Defined too narrowly, because close substitutes are wrongly excluded.
 - b. Defined too broadly, because even weak substitutes look attractive at the high prevailing price.
 - c. Impossible to define for differentiated products.
 - d. Defined correctly only if marginal cost is known.
2. A firm charges different prices to different consumer groups (e.g., students and adults) based on an observable characteristic, and resale between the groups is not possible. This is an example of:
 - a. First-degree price discrimination.
 - b. Second-degree price discrimination.
 - c. Third-degree price discrimination.
 - d. Uniform pricing.
3. Compared with persuasive advertising, informative advertising is more likely to:
 - a. Reduce the price elasticity of demand by building brand loyalty.
 - b. Increase the price elasticity of demand by lowering consumers’ search costs.
 - c. Have no effect on market competition.
 - d. Always reduce consumer welfare.
4. In an infinitely repeated game with grim-trigger strategies, collusion is easier to sustain when:
 - a. Firms discount the future more heavily.
 - b. Firms are more patient.
 - c. The one-shot deviation profit is larger.
 - d. Firms interact only once.
5. According to the Areeda-Turner test, pricing is presumed to be predatory when the price is set:
 - a. Above average total cost.
 - b. Below average variable cost.
 - c. Equal to the monopoly price.
 - d. At the level that maximizes short-run profit.
6. An upstream manufacturer sells an input to a downstream retailer, and both add a markup (double marginalization), so the final price exceeds the integrated-monopoly level. Which arrangement can eliminate this inefficiency?
 - a. A linear wholesale price set above the upstream marginal cost.

- b. A two-part tariff in which the wholesale price equals the upstream marginal cost.
 - c. Prohibiting all vertical contracts between the two firms.
 - d. All of the above.
7. In a market with positive network effects, the “critical mass” is:
- a. The maximum number of users the network can support.
 - b. The minimum number of adopters needed for the network to grow on its own toward wide adoption.
 - c. The maximum number of users at which the monopolist maximizes profit.
 - d. The minimum number of adopters needed to guarantee that marginal cost equals marginal revenue.

Part 2 – Analytical Exercises

Exercise 1 – Stackelberg Competition and Commitment (5 points)

Two firms produce a homogeneous good and compete by choosing quantities. Inverse demand is

$$P(Q) = 12 - Q, \quad Q = q_1 + q_2.$$

Both firms have constant marginal cost $c = 0$ and no fixed costs. Firm 1 (the leader) chooses q_1 first; firm 2 (the follower) observes q_1 and then chooses q_2 .

- (a) Derive firm 2’s best-response function $q_2 = BR_2(q_1)$.
- (b) Using backward induction, compute the Stackelberg equilibrium quantities q_1^* and q_2^* , the market price, and each firm’s profit.
- (c) Compute the Cournot (simultaneous-move) equilibrium quantities and profits. Does the leader earn more or less than under Cournot? What about the follower?
- (d) Explain why the leader’s larger output is credible only if its quantity choice is an irreversible commitment. *Maximum 3 sentences.*

Exercise 2 – Price Competition with Differentiated Products (5 points)

Two firms sell differentiated products and compete in prices. The demand functions are

$$q_1 = 12 - 2p_1 + p_2, \quad q_2 = 12 - 2p_2 + p_1.$$

Both firms have constant marginal cost equal to 0.

- (a) Are the two goods substitutes or complements? Justify using the demand functions.
- (b) Derive firm 1’s best-response function $p_1 = BR_1(p_2)$.
- (c) Compute the symmetric Nash equilibrium prices, quantities, and profits.
- (d) Are the firms’ prices strategic complements or strategic substitutes? Relate your answer to the reaction function. *Maximum 2 sentences.*

Exercise 3 – Market Structure, Concentration, and a Merger (3 points)

An industry consists of five firms with the following market shares:

A: 40%, B: 30%, C: 15%, D: 10%, E: 5%.

- (a) Compute the four-firm concentration ratio C_4 and the Herfindahl-Hirschman Index (HHI) on the 0–10,000 scale. Using the usual thresholds ($H < 1,000$ unconcentrated; 1,000–1,800 moderately concentrated; $H > 1,800$ concentrated), classify this industry.
- (b) Firms C and D merge with no efficiency gains, so the merged firm's share equals the sum of the two shares. Compute the post-merger HHI and the change ΔH .