

**BS2298 Market Games Strategy
Sample Exam 1**

Instructions:

- **Section A - Answer ALL questions.**
- **Section B - Answer ALL questions.**
- **Section C – Answer ALL questions.**
- **Weighting:**
 - Section A is worth 20%.**
 - Section B is worth 20%.**
 - Section C is worth 60%.**

Section A

In this section you are being assessed more on the logic underlying the exercise, rather than on simply the numerical values of the answers themselves. Hence, please ensure that when answering questions in this section you do the following: (a) show all workings, (b) clearly signpost each step and (c) describe how you obtain quantity, price, profits etc. from the steps you use.

Question 1:

The inverse demand function in a market is given by $p=30-Q$ where Q is the aggregate quantity produced. The market has 3 identical firms with marginal and average costs of 10. These firms engage in Cournot competition.

- a) How much output does each firm produce? (4 marks)

Answer: $q=5$.

- b) What is the equilibrium price? (2 marks)

Answer: $p=15$.

- c) How much profit does each firm make? (2 marks)

Answer: $\pi = 25$.

One of the firms in the market shuts down. At the same time, one of the remaining firms discovers a better way to produce the product. This lowers its marginal and average costs to 8. Therefore, the market is now a duopoly with firm 1 having marginal and average costs of 10 and firm 2 marginal and average costs of 8. These firms continue to engage in Cournot competition and the inverse demand function is unchanged.

- d) What is the new equilibrium price in the market? (6 marks)

Answer: $p=16$.

- e) What has been the effect of these changes on firm 2's share of the industry output? (3 marks)

Answer: Firm 2's share increases from $1/3$ to $4/7$.

- f) How much profit does each firm make after these changes? (3 marks)
Answer: $\pi_1 = 36, \pi_2 = 64$.

Section B

Answer ALL questions in this section.

In this section you are being assessed on the understanding of relevant economic theory and explanation of the intuition. For each of the following statements, decide whether they are TRUE or FALSE and provide clear and concise explanations for your answers.

Question 1:

- a) If consumers face search costs, the equilibrium price will not be equal to marginal cost under Bertrand competition. (4 marks)
True.
- b) Collusion is more likely to be successful when there is a larger difference in marginal costs among the firms. (4 marks)
False.
- c) Horizontal mergers are always beneficial to the outsiders under Cournot competition. (4 marks)
False.
- d) Exclusive dealing can be used to solve the double marginalisation problem. (4 marks)
False.
- e) Coordinated effects are more likely to arise when there is a high level of transparency in the market. (4 marks)
True.

Section C

Answer BOTH questions in this section.

Question 1:

Explain what are the unilateral effects and the coordinated effects that can arise under horizontal mergers. Discuss the conditions under which it is more likely that each of these effects will arise.

(30 marks)

Unilateral effects arise when firms adopt individual profit maximizing behaviour, and a higher market price post-merger may result from moving to a new one-shot equilibrium. Coordinated effects arise when there is a higher likelihood of tacit collusion after the merger.

For unilateral effects, you should discuss especially about the degree of substitution between firms;

For coordinated effects, you should discuss about factors that affect the likelihood of collusion.

Question 2:

- a) Explain how the number of firms affects the equilibrium market price under Cournot competition. (12 marks)

The market price decreases when the number of firms increases. This is due to the negative externality each firm imposes on the others when it decides its own output, and this externality becomes larger when the number of firms is larger.

- b) Explain how the number of firms affects the equilibrium market price under the Bertrand paradox. Discuss why the results are different from those in part a).

(18 marks)

Under Bertrand competition, the number of firms does not affect the equilibrium price as long as there are at least two firms in the market. This is a

consequence of Bertrand paradox, where price equals marginal cost when at least two firms compete.

The key difference should emphasize the incentives. Under Cournot competition, when a firm produces more, it gains some market share; whereas under Bertrand competition, when a firm charges a lower price, it gains the whole market.