THE UNIVERSITY OF MELBOURNE

MELBOURNE BUSINESS SCHOOL

Managerial Economics

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Final Exam: Semester 2, 1998
Reading Time: 15 minutes
Exam Duration: 120 minutes

THIS IS AN OPEN BOOK EXAMINATION

1. During the reading time candidates may make notes on the exam paper but may not write in their script books.

2. Simple calculators can be used.

3. Answer Parts A and B and follow the instructions for each carefully.

4. Answer all questions in the answer book provided.

5. The total marks for this exam add to 60.

6. **Good Luck!**

Part A: Multiple Choice Questions (20 Marks)

Answer the following <u>twenty</u> (20) questions in **your answer booklet (not on this paper)**. Clearly number all questions and write your answers in CAPITAL LETTERS.

1. **A monopolist sells its produce into a market where the (constant) elasticity of demand is -1.5. The (constant) marginal cost is $10 per unit. To maximise its profit, the firm should charge a price per unit of:**

(a) $10, as this will ensure that price equals marginal cost
(b) $20, as this will ensure that marginal revenue equals marginal cost
(c) $30
(d) None of the above

2. **In a perfectly competitive industry, a firm can:**

(a) Make an economic profit in the short-run but not in the long-run
(b) Make an economic loss in the short-run but not in the long-run
(c) Make an accounting profit, but not an economic profit, in the long-run
(d) All of the above.

3. **Two firms (A and B), produce a single identical product and have marginal costs**
   MC_A **and** MC_B**, marginal revenues** MR_A **and** MR_B**, and market marginal revenue**
   MR. If both firms produce as a cartel, they should produce so that

(a) $MC_A = MC_B = MR$
(b) $MC_A = MR_A$ and $MC_B = MR_B$
(c) $MC_A + MC_B = MR$
(d) $MC_A + MC_B = MR_A + MR_B$, not necessarily $MC_A = MR_A$

4. **A dominant strategy is one that**

(a) beats all others, regardless of the opponent's choice.
(b) beats all others, given the opponent's choice.
(c) is beaten by all others, regardless of the opponent's choice.
(d) is beaten by all others, given the opponent's choice.

5. What is the advantage to a particular firm of cheating on an otherwise effective cartel?

(a) The industry can then act like a monopoly.
(b) It decreases risk.
(c) It enhances credibility.
(d) It pays in the short-run and may pay in the long run.

6.   In a model of monopolistic competition in the long run equilibrium

(a) no firms remain in the market.
(b) new firms will want to enter the market.
(c) all firms must be operating at minimum average cost.
(d) there are no economic profits being made.

7. Con Agra has introduced a lean mixture of barley and ground beef which is indistinguishable from ground beef but has about the same amount of fat as chicken. As a result, the

(a) demand for chicken increases.
(b) demand for barley decreases.
(c) quantity demanded of chicken increases.
(d) demand for chicken decreases.

8. The price of stereo systems has fallen while the quantity purchased has remained constant. This implies that the demand for stereo systems has

(a) increased.
(b) increased while the supply of stereo systems has increased.
(c) decreased while the supply of stereo systems has increased.
(d) decreased while the supply of stereo systems has decreased.

9.   The cross price elasticity of demand is defined as the

(a) Percentage change in the quantity demanded divided by the percentage change in the good's price.
(b)   Percentage change in the quantity demanded divided by the percentage change in a different good's price.
(c) Percentage change in the good's price divided by the percentage change in a different good's price.
(d)   Change in the quantity demanded of a good divided by the change in its price.

10. A profit maximising firm sets its price

(a) to maximise sales.
(b) so that the demand is elastic.

(c) to equate average revenue to average cost.
(d) where marginal profit is maximised.

11. When average total cost is at its minimum

(a) average variable cost is declining with increases in output.
(b) Average total cost is equal to average variable cost.
(c) Marginal cost is less than average total cost.
(d) Marginal cost is greater than average total cost.

12. Oligopoly is a market structure that necessarily has

(a) cartels
(b) a large number of firms with homogeneous products.
(c) A small number of firms, but more than one.
(d) A large number of firms with slightly different products.

13. Your firm is in a duopoly. When you drop your price, your rival is likely to follow. If you agree to wage rises for your employees, this is likely to have:

(a) a negative strategic effect
(b) a positive strategic effect
(c) no strategic effect
(e) no effect on profits at all.

14. Potential entrant E threatens to enter incumbent I's market and I promises to lower price to P should E enter. For I to credibly deter E's entry, E must believe,

(a) P > I's average variable cost.
(b) I could conceivably charge P without E's threat.
(c) P is low enough to discourage E.
(d) P > I's average total cost.

15. A meet-the-competition clause

(a) is a commitment but not a threat
(b) is a threat but not a commitment
(c) is both a threat and a commitment
(d) in neither a threat nor a commitment

16. Profit maximising cartels choose price equal to

(a) marginal cost

(b) average total cost of the last unit
(c) marginal revenue
(d) the monopoly price.

17. A sub-game perfect equilibrium

(a) must be a dominant strategy outcome.
(b) must be a Nash equilibrium.
(c) must be both a Nash equilibrium and a dominant strategy outcome.
(d) none of the above.

18. Suppose a potential entrant is choosing between entering and not entering a given market. The incumbent, post-entry, may or may not fight a price war. If the returns (to the entrant first, incumbent second) from the possible actions are: enter, fight (-5, 3); enter, not fight (4,4); not enter (0, 15) then

(a) there are no Nash equilibria of this game
(b) there is only one Nash equilibrium of this game
(c) there are two Nash equilibrium of this game
(d) there are three Nash equilibrium of this game

19. Consider the entry game in Question 18 above, given the payoffs we expect the potential entrant

(a) to not enter the market.
(b) to enter and be faced with a price war
(c) to enter and the incumbent to accommodate that entry
(d) not enough information

20. Consider the entry game in Question 18 above, but suppose instead that some external pressures have resulted in the payoff associated from not fighting the potential entrant to the incumbent to go from 4 to –2. Given the payoffs, we expect the potential entrant

(a) to not enter the market.
(b) to enter and be faced with a price war
(c) to enter and the incumbent to accommodate that entry
(d) not enough information

Part B: Short Answer Questions

Choose <u>two</u> (2) out of the <u>four</u> (4) following questions in the examination booklet provided (**each worth 20 marks**) Indicate on the front of that booklet your two choices. You will be graded on these and these only.

Question 1.

Consider two firms competing in a segment of the pharmaceutical industry. One firm, Totaltrip, is contemplating an investment in a new R & D lab. There is some probability of success associated with this new laboratory such that it will result in efficiencies that will lower the expected value of its variable cost of production. Totaltrip's only competitor, Greenleaf, does not have the resources to undertake a similar investment. Totaltrip's corporate financial planning staff has studied the proposed investment and reports that *at current output levels*, the present value of the expected cost savings from the investment is less than the cost of the project, but just barely so. Now, suppose that Totaltrip hires you as a consultant. You point out that a complete analysis would take into account the effect of the investment on the market equilibrium between Totaltrip and Greenleaf. What would this more complete analysis say about the desirability of this investment? Carefully detail your assumptions and analysis.

Question 2.

Consider two non-specific industries that are moderately concentrated with relatively high barriers to entry. Suppose that the two industries are quite similar except that in the first industry, firms can adjust their capacity very quickly in response to new orders while in the second industry, firms must plan in advance for any increase in capacity. (An example might be local delivery services where the first industry's main inputs of production can be rented on short notice, e.g. small trucks, and workers can be hired on a temporary basis, while the second industry's main inputs must be specially equipped and special ordered in advance.)

(a) All else equal, which industry would be more attractive (i.e. which industry would be likely to have higher profit margins)? Briefly explain why.
(b) Consider the effect of a short-term increase in demand (i.e. at any price level consumers are willing to buy more). In which industry would short-term profit margins increase the most? Briefly explain why.

Question 3.

A village has 10 people of equal ability. The residents of the village could fish at the local trout stream and sell the trout for $1 each or they could work at the fly rod factory and earn a wage of $4 a day. Suppose the total number of trout that can be caught in a day is:

$$F(n) = 12n - 2n^2 \qquad \text{where n is the number of people fishing.}$$

A villager would rather fish unless he could earn more money in the factory.

(a) If the villagers acted independently of each other, how many would fish? What would be the total earnings of the village?
(b) Suppose the village government wanted to coordinate the villager's employment decisions so that the total earnings of the village would be maximised. How many villagers would fish? What would be the total earnings of the village?
(c) Explain why your answers to (a) and (b) must be different, or must be the same?

Question 4.

The following is an interpretation of the rivalry between the United States and the Soviet Union for geopolitical influence in the 1970s and 1980s. Each side has the choice of two strategies: Aggressive and Restrained. The following payoff matrix prevails:

		Soviet Union	
		Restrained	Aggressive
U.S.	Restrained	(4,3)	(1,4)
	Aggressive	(3,1)	(2,2)

For each player, 4 is best and 1 is worst.

(a) Does either country have a dominant strategy?
(b) Suppose the countries move simultaneously. Find the Nash equilibrium.
(c) Next consider three different and alternative ways in which the game could be played with sequential moves:
    (i)   The U.S. moves first and the Soviet Union moves second
    (ii)   The Soviet Union moves first and the U.S. moves second
    (iii)   The Soviet Union moves first, the U.S. moves second, but the Soviet Union has a further move where they can change their first move.
    For each case, draw the game tree and find the sub-game perfect equilibrium.
(d) What are the key strategic issues (e.g. commitment, credibility etc.) for the two countries?