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UNIVERSITY OF LONDON

279 0066 ZA

BSc degrees and Diplomas for Graduates in Economics, Management, Finance and the Social Sciences, the Diploma in Economics and Access Route for Students in the External Programme

Microeconomics

Friday, 2 June 2006 : 2.30pm to 5.30pm

Candidates should answer **EIGHT** of the following **FOURTEEN** questions: **FIVE** from Section A (5 marks each) and **THREE** from Section B (25 marks each). **Candidates are strongly advised to divide their time accordingly.**

A hand held calculator may be used when answering questions on this paper but it must not be pre-programmed or able to display graphics, text or algebraic equations. The make and type of machine must be stated clearly on the front cover of the answer book.

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SECTION A

Answer **five** questions from this section (5 marks each).

1. Consider the following production functions:

i. $Q = L^{0.8} K^{0.2}$

ii. $Q = 5L + 2K$

Do either of the production functions exhibit

(a) decreasing returns to scale?

(b) diminishing returns to a factor?

Explain your answer.

2. Suppose that a bright student can get through college for a cost of £ A , a dull student can get through college for a cost of £ B , and that it is worth £ C to convince an employer that you are bright. Suppose also that nothing of value is learned in college. In which of the following circumstances would bright students go to college and why? Include in your explanation reasons for rejecting any of the circumstances.

i. $B > A > C$

ii. $C > B > A$

iii. $B > C > A$

3. A necessary condition for a Pareto-efficient allocation of resources is that, in the production of all commodities, the marginal rates of technical substitution between any pair of factor inputs are equalised. True, false, or uncertain? Explain your answer.

4. Suppose two firms can choose independently whether to advertise or not. When both advertise they earn profits of 250 each. When neither advertise they earn profits of 500 each. When one firm advertises and the other does not, the firm that advertises earns a profit of 750 and the other earns a profit of 0.

(a) Does either firm have a dominant strategy in this game?

(b) Does the game have a Nash equilibrium?

(c) How will your answers differ if firm 2's payoffs are now altered so that, when firm 1 does not advertise, firm 2 earns a profit of 300 when it advertises and 400 when it does not? (Assume that all other payoffs are unchanged.)

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5. (a) What are the two characteristics of pure public goods?
- (b) Why may reliance on private solutions result in underprovision of a pure public good?
- (c) Assuming voters are taxed equally to pay for a pure public good, why may majority voting lead to overprovision of the good?
6. Define the Laffer Curve and explain its anticipated shape.

SECTION B

Answer **three** questions from this section (25 marks each).

7. (a) Explain how a monopoly can increase its profits using the following pricing schemes: i. perfect price discrimination, ii. multi-part pricing, iii. market-segmentation price discrimination.
- (b) What factors constrain the ability of the monopoly to increase its profits by means of these types of price discrimination?
- (c) With reference to your analysis in (a) and (b) explain how the following may function as price discrimination schemes:
- i. requiring airline travellers to spend a least one Saturday night away from home to qualify for a low fare;
 - ii. selling soft drinks in 'regular' and 'family' size packs;
 - iii. selling food processors along with coupons that can be sent to the manufacturer to obtain a £10 rebate;
 - iv. charging high-income patients more than low-income patients for plastic surgery;
 - v. auctioning off leases on tracts of land and allowing oil companies to bid for the right to explore each tract of land and to extract oil.
8. (a) Discuss the influence of the state of competition in both labour and product markets on the wage rate and the level of employment in an industry.
- (b) In what circumstances could
- i. a government-imposed minimum wage (wage floor),
 - ii. a government-imposed maximum price (price ceiling)
- raise the level of employment?

9. (a) Examine how adverse selection problems arise in
- i the market for car insurance,
 - ii the market for used cars.
- (b) What methods are used to deal with the adverse selection problems you examined in (a)?
10. (a) i. Consider the following set of preference statements: Consumption bundle (11,17) is indifferent to bundle (14,21); bundle (10,19) is preferred to bundle (14,21); bundle (14,21) is preferred to bundle (15,8); bundle (15,8) is indifferent to bundle (11,17). Does the set of preference statements violate the transitivity assumption? Do any of the preference statements violate the assumption of non-satiation? Explain your answers.
- ii. Does zero consumption of a commodity by an individual imply that the individual's indifference curves do not conform with the assumption of a diminishing marginal rate of substitution? Explain.
- (b) A murder has been committed. The only clue is a grocery receipt left at the scene by the murderer. The receipt shows that 20 bags of crisps selling for £2 a bag and 10 six-packs of cola selling for £6 per six-pack were bought that day. There are two suspects: Bluebeard and Tinkerbell. On searching their apartments, you find each suspect's grocery bill for the previous week. Last week crisps were £3 and cola was £5 a six-pack. Bluebeard bought 35 bags of crisps and 4 packs of cola at those prices. Tinkerbell bought 30 bags of crisps and 7 packs of cola at those prices. Supposing that these people have well-behaved preferences, can you tell who is not the murderer?
11. Individual *A* is risk averse. Individual *B* is risk loving.
- (a) Assuming each is offered the same gamble, analyse the conditions in which both *A* and *B* take the gamble. Assuming, again, that each is offered the same gamble, carefully analyse how the terms of the gamble should be set to ensure that one individual accepts the gamble and the other rejects it.
- (b) Now assume that each individual is offered insurance on the same terms against the risk of a loss. The individuals are free to choose their levels of insurance cover except that they are not allowed to overinsure. Suppose, also, that *A* and *B* are offered insurance terms whereby the premium rate is less than the probability of loss. Will both *A* and *B* necessarily buy full insurance? If insurance terms are changed so that the premium rate exceeds the probability of loss, will both *A* and *B* necessarily choose to be uninsured?

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12. (a) The intertemporal theory of utility maximisation says that the present value of income (wealth) and not the income in any one year determines consumption in each year. Explain.
- (b) Suppose there is an increase in a person's wealth while the interest rate remains constant. Will her current saving level necessarily fall? Explain your answer.
- (c) A fall in the rate of interest reduces the opportunity cost of current consumption. In consequence, will both borrowers and lenders tend to increase their current consumption? Explain your answer.
- (d) Given the same initial endowment position and the same real investment opportunities, will somebody who lends always invest more than somebody who borrows? Explain your answer.
13. Consider a free-entry, perfectly competitive industry with identical firms.
- (a) Analyse the factors determining the size of the output response of this industry with respect to an increase in demand both in the short run and in the long run. Explain the possible long-run effects of the increase in demand on the output of a representative firm in the industry.
- (b) Compare the long-run effects on a representative firm's output of a subsidy on each unit of output with a lump-sum subsidy paid to every operative firm.
14. Suppose the airline market between London and Paris is served by only two firms – LondonAir and ParisAir. Let both firms have constant marginal and average costs of 40. Assume the inverse demand curve for the industry is given by $P = 100 - Q$ and that each firm chooses its output level.
- (a) Calculate the Cournot-Nash equilibrium output and profit of each firm.
- (b) How much should LondonAir be willing to invest to lower its marginal cost from 40 to 25, assuming that ParisAir will not follow suit?
- (c) Suppose that LondonAir guesses correctly that ParisAir has a Cournot conjectural variation, so LondonAir plays the part of Stackelberg leader. Assuming that both firms have constant marginal and average costs of 40, what is each firm's equilibrium profit?
- (d) Given that LondonAir plays Stackelberg and ParisAir plays Cournot, how much should LondonAir be willing to invest to lower its marginal cost from 40 to 25, assuming that ParisAir will not follow suit?
- (e) Assuming that both firms have constant marginal and average costs of 40, calculate the Bertrand-Nash equilibrium price and profit of each firm.
- (f) How much should LondonAir be willing to invest to lower its marginal cost from 40 to 25, assuming that ParisAir will not follow suit?

END OF PAPER