This paper is not to be removed from the Examination Halls

UNIVERSITY OF LONDON 279 0028 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

Managerial Economics

Friday, 2 June 2006 : 2.30pm to 5.30pm

Candidates should answer **SIX** of the following **TEN** questions: **FOUR** from Section A (12.5 marks each) and **TWO** 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.

PLEASE TURN OVER

UL06/43

SECTION A

Answer all **four** questions from this section (12.5 marks each).

1. (a) Find the pure strategy Nash equilibrium in the following two player game:

		Player 2	
		L	*H*
Player 1	*L*	50,50	40,70
	H	70,40	60,60

(b) Interpret the data in the table above as gross profits of two competing supermarkets. The strategies *L* and *H* refer to customer service levels (low and high respectively). A supermarket can provide a high service level at cost c_i ($i=1,2$). Providing a low service level is costless. Modify the table to take into account the service level costs and determine for which values of c_1 and c_2 Player 1 choosing a low service level and Player 2 choosing a high service level is a Nash equilibrium.

2. A monopoly has market demand $Q=75,000-600P$ and marginal cost 50.

(a) What is the value of an invention which reduces the marginal cost to 45?

(b) If the industry is perfectly competitive, what is the maximum amount an inventor could receive by licensing the invention to firms in the industry?

3. Suppose that your mark for the Managerial Economics unit is determined in the following way. You roll a dice. If you roll a '1' at any point your mark is definitely zero. If you don't roll a '1' multiply the number by 20. This is your current score. If at any point your total score is above 100 your mark is zero. Unless the game has stopped (i.e. you have rolled a '1' or your score is over 100) you are allowed to keep rolling the dice and add the score.

(a) Draw the decision tree.

(b) What is your optimal game plan? Is it different for risk averse versus risk neutral students?

(c) If all students use the optimal game plan, what is the average mark? What is the failure rate? (The pass mark is 34.)

(d) Would you prefer it if your mark were determined in this way (rather than by performance on this exam)? Explain your answer.

PLEASE TURN OVER

4. A firm's production function is given by $q(K,L) = K^{1/4}L^{3/4}$. The input prices are r per unit of capital and w per unit of labour. Derive the conditional input demands and the cost function.

SECTION B

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

5. An entrepreneur has the opportunity to pursue a project which has a payoff of R with probability p and 0 with probability $1-p$. The entrepreneur has no funds and needs to borrow an amount x to start the project. If the project is successful (i.e. the payoff is R) the bank will demand a payment of D $(D<R)$. If the project is unsuccessful, the bank cannot demand any payment. When the loan is obtained, the entrepreneur can decide to either put effort into the project (which gives him a disutility with monetary equivalent c) or he can embezzle the amount of the loan x. In the latter case the project is not started and the bank cannot demand a payment.

   (a) Draw the entrepreneur's decision tree.

   (b) For which values of the parameters will the entrepreneur pursue the project?

   (c) Assume $p=0.9$, $R=1000$, $x=200$, $c=100$. Find the maximum value of D for which the entrepreneur pursues the project.

   (d) Assuming the entrepreneur pursues the project, determine the value of D which gives the bank zero expected profit. What is this value for the parameter values in (c)?

   (e) Is the bank prepared to lend given these parameter values? If so, what is the entrepreneur's expected payoff assuming the bank sets D as in (d)?

6. Consider a duopoly with demand $Q = a - p$. Ignore costs.

(a) Find the Cournot equilibrium quantities.

(b) Find the Stackelberg equilibrium quantities assuming Firm 1 is the leader.

(c) Find the optimal quantity if firms collude.

(d) Suppose a equals *90* or *110* each with probability ½. Neither firm knows a. Find the Cournot equilibrium quantities.

(e) For the setup in (d), what are the equilibrium quantities in each period if the firms compete for two periods? Ignore discounting.

7. The cost of a pair of glasses is £10 to the optician. There are two types of consumers, a fraction a of type A and a fraction *1-a* of type B, with willingness to pay (WTP) as given in the table below.

WTP for	**Type A**	**Type B**
first pair of glasses	100	80
second pair of glasses	20	15

(a) Suppose there is no discount for a second pair of glasses i.e. the second pair is sold for the same price as the first pair.

i. Find the optimal price and profit if the optician wants to sell 2 pairs to all consumers.
ii. Find the optimal price and profit if the optician wants to sell 2 pairs to type A consumers and 1 pair to type B consumers.
iii. Find the optimal price and profit if the optician wants to sell 1 pair to all consumers.
iv. Find the optimal price and profit if the optician wants to sell 1 pair to type A consumers only.
v. Determine the best policy for the optician out of i.- iv.

(b) Now suppose the optician offers a 'two-for-one' or 'buy one, get one free' deal i.e. he sets a price for 2 pairs of glasses.

i. Find the optimal price and profit if the optician wants to sell to all consumers.
ii. Find the optimal price and profit if the optician wants to sell to type A consumers only.
iii. Determine the best policy for the optician out of i. and ii.

(c) Is the optician better off with the 'buy one, get one free' deal than with the uniform price in (a)?

PLEASE TURN OVER

8. (a) How should you bid in a private value second price sealed bid auction? Explain your answer.

(b) 'A seller who does not specify a minimum bid leaves money on the table (i.e. receives lower expected revenue than a seller who does).' Discuss.

(c) Some internet auctions sites have a 'Buy it now' (BIN) feature which allows the seller to set a price such that if this price is bid the auction ends immediately and the item is sold at the BIN price. Why would a seller want to use the BIN feature?

(d) Items for which the seller stipulates a BIN price appear to attract lower bids than those without a BIN price. Discuss possible explanations for this phenomenon.

9. (a) How should companies set their executives' pay?

(b) The Securities and Exchange Commission will require companies to report a total compensation figure for each of the top five executives and all directors. Asked whether this would have an effect on the level of executive compensation, William C. Tyson, professor of legal studies and ethics at Wharton, said 'When people are forced to undress in public, they pay attention to their figures.' Discuss.

10. Explain the finite and infinite versions of the alternating offers bargaining game. Illustrate your explanation with numerical examples.

END OF PAPER