



**COLLECTION PAPER FOR INTRODUCTORY MICROECONOMICS**  
**Philosophy, Politics and Economics, Economics and Management**  
**Engineering, Economics and Management**

**NEW COLLEGE Hilary Term 2010**

Time allowed: 90 mins

*Answer 3 questions: at least one from part A and at least one from part B.*  
*All questions attract the same number of marks.*

**Part A.**

1. Suppose that a consumer's preferences for two goods  $x_1$  and  $x_2$ , can be represented by the utility function  $u = \ln x_1 + x_2$ . Denote the prices of these goods by  $p_1$  and  $p_2$  respectively.
  - i) Derive expressions for the consumer's Marshallian demands. Show that for  $x_1$  the own price compensated elasticity of demand is the same as the uncompensated elasticity. What does this mean for behaviour?
  - iii) Calculate the welfare effects of doubling the price of good 1.
  
2. Suppose that a firm's production function is estimated to be  $y = 1.52 L^{0.6} K^{0.4}$  where  $\{y, L, K\}$  denote output, labour and capital respectively, and that the rental rate per unit of capital is £8 and wages are £24 per unit of labour.
  - i) Show that this firm has constant returns to scale.
  - ii) Suppose that the firm's capital stock is fixed in the short term at  $\bar{K}=100$ 
    - a) Find labour demand as a function solely of output
    - b) Find the firm's variable and average variable cost functions
    - c) Find the firm's fixed and average fixed cost functions
    - d) Find the firm's average cost function.
    - e) Find the firm's marginal cost function

Draw the cost curves you have derived on a single diagram.

- f) Derive the firm's short run supply curve.

3. Consider an industry in which firms compete through quantities and in which the market inverse demand curve is linear. Suppose two firms, A and B, are considering whether or not to enter the industry and assume that both firms have constant average costs.
- (i) Derive the equilibrium outputs if Firm A is able to enter the market first.
  - (ii) Compare the outcomes in part (i) with what would happen if the firms moved simultaneously and explain the intuition for your result.
  - (iii) Suppose that Firm B acquires a technological advantage over Firm A and its unit costs are half of those of Firm A. How would this affect the duopolistic equilibrium in the simultaneous version of the game?

### **Part B**

1. What are the likely behavioural and distributional effects for consumers of falling interest rates coupled with an increase in the spread between the rates at which consumers can save and borrow?
2. What should regulatory authorities do about
  - (i) natural monopolies?
  - (ii) vertical mergers?
3. If oligopolistic firms set prices, under what circumstances would they not price at marginal cost?

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*New College, HT 2009*