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OLLSCOIL NA hÉIREANN, GAILLIMH
NATIONAL UNIVERSITY OF IRELAND, GALWAY

Autumn Examinations 2002

Microeconomics (EC215)

2^{nd} B.A. (Economic and Social Studies) – St. Angela's College, Sligo

Prof. Michael Cuddy
Prof. Huw Dixon
Ms. Breda Lally

Time Allowed: **THREE HOURS**
Marks: **300**

Instructions: This exam consists of two sections worth 150 marks each.

- **Section A:** Answer **15** out of 20 short questions. Each question is worth 10 marks.
- **Section B:** Answer **3 questions** (worth 50 marks each).

Section A

1. What does a utility maximizing consumer do when MRS < P_x/P_y?

2. True or False: Indifference curves can never intersect. (Explain the reason for your answer).

3. Define and explain marginal rate of substitution (MRS).

4. For each of the following state whether demand is elastic, inelastic or unit elastic. In each case indicate how a producer should change price in order to increase total revenue.
   a. PED = 0.2
   b. PED = 1.5
   c. PED = 1

5. Define income elasticity of demand. State when it less than and greater than one.

6. For each of the following situations, what happens to the mobile phone market? Indicate whether the demand or supply curve shifts, or if there is a movement along the demand or supply curve. Indicate what happens to equilibrium price and quantity.
   a. price of mobile phone call increases
   b. the price of mobile phones decreases
   c. a report is published stating that mobile phone use increases the risk of cancer
   d. the number of suppliers of mobile phones increases

7. True of False: A consumption bundle on a lower indifference curve is preferred to a consumption bundle on a higher indifference curve. (Explain your answer).

8. When might a budget constraint be kinked?

9. True or False: The income effect of a price increase is never positive (Explain your answer).

10. Two conditions must be satisfied when a consumer is maximizing his utility given his income. What are they?

11. A firm purchases capital and labour in competitive markets at prices of $w = 8$ and $r = 10$ respectively. With the firm's current input mix, the marginal product of labour is 24 and the marginal product of capital is 20. Is this firm minimizing its costs? If so, explain how you know. If not, explain what the firm ought to do.

12. Suppose production processes A and B give rise to the following marginal and average total cost curves:

$$MC_A = 12Q_A \qquad ATC_A = 16/Q_A + 6Q_A$$
$$MC_B = 4Q_B \qquad ATC_B = 240/Q_B + 2Q_B$$

where the subscripts denote processes A and B respectively. If the firm wants to produce 12 units of output, how much should it produce with each process?

13. Firms in a perfectly competitive industry may make supernormal profits in the short run but not in the long run. Explain why.

14. Define and explain marginal rate of technical substitution.

15. If isoquants are linear what is the relationship between the two inputs?

16. What is the short-run condition for profit maximization for a perfectly competitive firm?

17. Define and explain each of the following:
    a. constant returns to scale
    b. increasing returns to scale
    c. decreasing returns to scale

18. Outline the four factors that give rise to a monopoly.

19. Define and explain the hurdle model of price discrimination

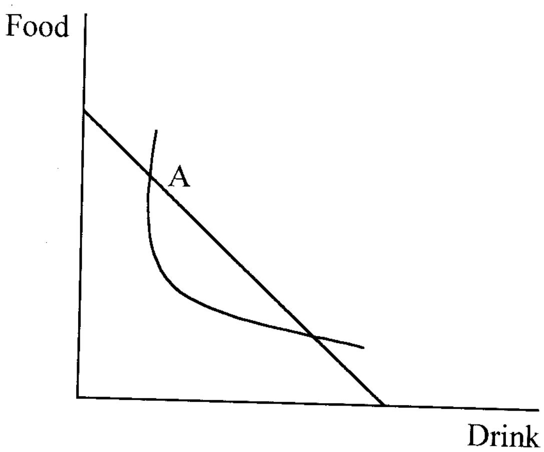
20. True or False: A firm can produce below the Average Variable Cost in the short run. Explain.

Section B

1. The monthly demand for mobile phones is given by P = 100 – q, where P is the price and Q is the number of phones purchased per month.

   a. Draw the demand curve.
   b. If the price of mobile phones is £80 how much revenue will mobile phone producers get each month?
   c. Calculate the price elasticity of demand for phones when the price is £80.
   d. What should mobile phone producers do to increase total revenue?
   e. Calculate consumer surplus when the price of phones is £80.

2. a. What determines the slope of a budget constraint and an indifference curve?
   b. The following diagram shows the consumer's budget constraint defined over food and drink.



   Is consumption bundle A the optimal consumption bundle? Why? In your answer refer to the MRS and the slope of the budget line.
   c. Refer to part b. Assume income is equal to €300 and that the price of food is €10 per meal and that the price of drink is €3 per bottle. If income decreases to €250 and at the same time the price of drink falls to €2 per bottle, what would happen to the budget constraint?
   d. Analyze fully and illustrate the income and substitution effects of an increase in the price of an inferior good.

3. a. Define an isoquant and an isocost line.
   b. If a firm experiences increasing returns to scale, what would its map of isoquants look like and why?
   c. What does a perfectly competitive firm's demand curve look like and why?
   d. Why do we expect monopoly firms to earn supernormal profits? Illustrate graphically.

4. a. A firm in a competitive industry has a short-run marginal cost curve $SMC = 10 + 4Q$ and a short-run average variable cost curve $AVC = 10 + 2Q$. If the firm faces a price of 50 what quantity should it sell? At what level of fixed cost will this firm earn zero economic profit (i.e. normal profit)?

b. A monopolist has a demand curve given by $P = 200 - 2Q$ and a total cost curve given by $TC = 2Q^2 + 32$. The associated marginal cost curve is $MC = 4Q$. Find the monopolist's profit maximizing quantity and price. How much economic profit will the monopolist earn?

c. Write a short note on each of the following types of market structures

(i) Duopoly

(ii) 1st Degree Price Discriminating Monopolist