

OLLSCOIL NA hÉIREANN, GAILLIMH  
NATIONAL UNIVERSITY OF IRELAND, GALWAY

Summer Examinations 2002

**Natural and Social Environment (EC120) – Paper 2**

1<sup>st</sup> Year B.A. (Economic and Social Studies) – St. Angela's College Sligo

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**TIME ALLOWED: THREE HOURS**

**MARKS: 300**

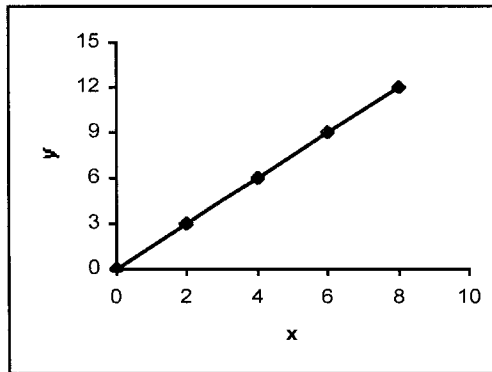
**Instructions:** This exam consists of three sections. All sections must be attempted. Please read the instructions for each section.

- **Section A (80 Marks):** Answer **ONE AND ONE OTHER** question (worth 40 marks each)
- **Section B (180 Marks):** Answer **FOUR** questions (worth 45 marks each)
- **Section C (40 Marks):** Answer **ALL** multiple choice questions in this section

Section A

**Question 1**

- (a) Three different types of graphs are used in economics. Name and describe them.
- (b) Describe the relationship between the following economic variables and draw graphs to illustrate these relationships:
- (i) income and savings
  - (ii) total revenue and output levels (assuming price is fixed)
  - (iii) profit and output levels
  - (iv) costs and output levels
- (c) Calculate the slope of the following relationship



(d) True or False:

- (i) A curved line has a constant slope
- (ii) Linear relationships are always positive
- (iii) Not all graphs have a maximum or minimum point
- (iv) The slope of a horizontal line is zero

## Question 2

- (a) In a 2000 survey of British pop wealth in *Business Age* magazine, David Bowie came top with £550m Paul McCartney came second with £520m and Gary Barlow 50<sup>th</sup> with £9.5m. The youngest person in the top 50 was Baby Spice with £14.5m
- (i) What percentage is Gary Barlow's wealth of Baby Spice's wealth?
  - (ii) By what percentage would Paul McCartney's wealth have to increase by before it equalled that of David Bowie's?
- (b) On Monday 27 October 1997 the Dow Jones share index in New York fell by 7% to 7,161.15 (the biggest one day fall since Black Monday in 1987). What was the index at the start of the day?
- (c) Solve the following:
- (i)  $(2x - 3)(4x + 1)$
  - (ii)  $p(2m + t) - t(3m - p)$
  - (iii)  $2x - 3 = 11$
  - (iv)  $4(2x - 3) = 8$
  - (v)  $3x^2 + 4x + 1 = 0$

Question 3

(a) Compute a simple price index for the following years using 1995 as the base year

Year	1995	1996	1997	1998	1999	2000
Price (€)	66.90	69.20	71.30	72.70	78.40	81.60

- (b) Rebase your answer to part a, making 1998 the base year
- (c) Suppose the government wishes to compare the cost of family food buying over the years. A basket of three items is used: bacon, eggs and tea. Using the data in the table below construct a Laspeyres price index using 1998 as the base year.  $Q$  = quantity,  $P$  = price (measured in cent)

	1998		1999		2000	
Product	$Q_0$	$P_0$	$Q_1$	$P_1$	$Q_2$	$P_2$
Bacon (kilo)	15	304	18	327	12	452
Eggs(doz)	30	135	24	146	35	154
Tea (227g)	12	205	18	197	10	221

Section B

Question 1

American and Japanese workers can each produce 4 cars a year. An American worker can produce 10 tons of grain a year, whereas a Japanese worker can produce 5 tons of grain a year. To keep things simple, assume that each country has 10 million workers.

- a. Graph the production possibilities frontier of the American and Japanese economies
- b. For the United States, what is the opportunity cost of a car? Of grain?
- c. For Japan, what is the opportunity cost of a car? Of grain?
- d. Which country has absolute advantage in producing cars? In producing grain?
- e. Which country has comparative advantage in producing cars? In producing grain?
- f. Without trade half of each country’s workers produce cars, and half produce grain. What quantities of cars and grain does each country produce? Show this on the production possibilities frontiers.
- g. The Japanese trade minister suggests the following trade. Japan will produce cars only and will trade 20 million cars in return for 30 million tons of grain if the United States produces grain only. Show how this trade will benefit both countries. Show consumption with trade on the diagrams you have already drawn in part a.

## Question 2

- a. Illustrate (using demand and supply curves) and explain what happens to the price of a factor of production and its income if the following occurs:
  - (i) There is an increase in the demand for the factor
  - (ii) There is a decrease in the supply of the factor
- b. Define marginal revenue product and distinguish between marginal revenue product and marginal revenue.
- c. Why does marginal revenue product decline as the quantity of a factor employed increases.
- d. Illustrate and explain the relationship between the demand curve for labour and the marginal revenue product of labour curve.
- e. Outline and explain the three factors that cause changes in the demand for labour.
- f. Outline and explain the factors that determine the supply of (i) labour and (ii) capital.

## Question 3

- a. Define 'balance of trade'. When is it positive and when is it negative?
- b. Outline the tariff and non-tariff barriers that can be employed by governments to restrict international trade? Explain how they operate.
- c. What are GATT and the WTO?
- d. Outline and explain four arguments for restricting international trade (protectionism). Are these arguments justified?
- e. Why do countries import and export similar goods? E.g. The UK imports and exports cars. Why?

## Question 4

- a. Resources used in production in any economy can be divided into four main categories. What are they? Do economies have unlimited resources?
- b. Using a production possibilities frontier show when production is efficient and when it is inefficient.
- c. Explain the trade off between investment and current consumption. When is investment justified?
- d. Name five transition economies and explain why they are moving from a planned economy to a market economy.
- e. Outline and explain the main differences between a planned economy and a market economy.
- f. Explain why GDP is lower in many of the transition economies that it was in 1989 and why unemployment is higher. What problems have planned economies encountered in moving toward a planned economy?

### Question 5

- a. Define production and consumption externalities and give examples of both.
- b. Both the use and production of aluminum cans may impose external costs.
  - (i) What might be the external costs of producing cans? Of using cans?
  - (ii) Using the negative production externality, draw a diagram which shows why a private market will not result in the efficient quantity of this good being produced. Indicate how the government could ensure that the efficient quantity of this good would be produced.
- c. List the ways that the problems caused by externalities can be solved without government intervention?
- d. Imagine that you are a nonsmoker sharing a room with a smoker. According to the Coase Theorem, what determines whether your roommate smokes in the room? Is this outcome efficient? How do you and your roommate reach this solution?

### Question 6

- a. Define and give examples of:
  - (i) non-rival goods
  - (ii) non-excludable goods
  - (iii) common resources
  - (iv) public goods
- b. Are the externalities associated with public goods and common resources generally positive or negative? Use examples in your answer.
- c. Explain why:
  - (i) the free-market quantity of public goods is generally less than the efficient quantity
  - (ii) the free-market use of common resources is generally greater than the efficient use
- d. Give an example of an open-access resource that tends to be overexploited and explain two options that can be used to ensure that overexploitation of the resource does not occur.

## Section C

### MULTIPLE CHOICE

**N.B. Please submit this section along with your answer book  
Please fill in your name and ID number in the spaces provided**

**NAME:** \_\_\_\_\_ **ID NO.** \_\_\_\_\_

**For each of the following questions circle one answer. Negative marking applies (5 marks for a correct answer, 0 marks for an unanswered question and a penalty of 1 for an incorrect answer).**

1. A scatter diagram

- a. shows the values of an economic variable for different groups in a population at a point in time
- b. plots the value of one economic variable against the value of another
- c. is used to show how economic variables change over time
- d. none of the above

2.  $\frac{3}{5} \times \frac{3}{4} =$

- a.  $-\frac{3}{20}$
- b.  $\frac{27}{20}$
- c.  $\frac{9}{20}$
- d.  $\frac{12}{15}$

3. The production possibility frontier

- a. shows the combinations of goods that can be produced given the resources available
- b. is downward sloping
- c. illustrates the opportunity cost of producing a good
- d. shifts rightwards due to technological change and capital accumulation
- e. all of the above

4. A non-tariff barrier
- a. is a tax that is imposed by the importing country when an imported good crosses its international border
  - b. restricts international trade
  - c. can be a quantitative restriction on imports
  - d. all of the above
  - e. b and c
5. Marginal revenue product of labour
- a. is the change in total revenue as a result of producing one more unit of output
  - b. is the change in total revenue as a result of employing one more unit of labour
  - c. increases as the amount of labour employed increases
  - d. is equal to marginal revenue multiplied by marginal product of labour
  - e. b and d
6. The marginal revenue product of skilled labour is
- a. equal to the marginal product of unskilled labour
  - b. greater than the marginal revenue product of unskilled labour
  - c. less than the marginal revenue product of unskilled labour
  - d. is equal to the increase in total revenue as a result of employing one more unit of skilled labour
  - e. b and d
7. Economic rent is:
- a. the income required to induce the supply of a factor of production
  - b. is the opportunity cost of using a factor of production in its next best use
  - c. is an income received by the owner of a factor of production over and above the amount required to induce that owner to offer the factor for use
  - d. both a and b
8. The free-rider problem refers to
- a. the idea that when people can enjoy a public good without paying for it, they often do not contribute to the cost
  - b. the idea that markets fail to allocate resources efficiently when there are externalities
  - c. the idea that the marginal cost of an additional consumer enjoying a pure public good is zero
  - d. none of the above