ECO00001I
UNIVERSITY OF YORK
BA and BSc Degree Examinations
DEPARTMENT OF ECONOMICS AND RELATED STUDIES
ECO000011 MICROECONOMICS II FIRST SPECIMEN EXAMINATION PAPER
The first 17 questions
Time allowed: THREE hours

Please use the answer sheets attached to the examination paper. Students should not bring their own electronic calculators; standard university electronic calculators will be provided at each desk.

Please note the existence of the *Aide-Memoire* towards the end of this examination paper. You may find this useful when answering some of the questions.

There are 27 questions in sets of various sizes – the first 17 are here. Each set of questions is preceded by a preamble, which remains in force until the next preamble. Four marks are awarded for each correct answer and one mark will be deducted for each wrong answer. The resulting mark, denoted by x will be between -27 and 108. It will then be converted into a final mark for this module y using the formula y = (x+27)/1.35, which ensures that the final mark will lie between 0 and 100.

Preamble: Consider a market for a hypothetical good in which there are a number of buyers and sellers, each of which wants to buy or sell one unit of the good. There are 6 buyers and their reservation prices are 10, 5, 11, 10, 7 and 11. There are 5 sellers and their reservation prices are 10, 5, 2, 6 and 2.

Question 1: At what price or prices is demand equal to supply? (If the demand or supply at a price consists of a set of values because some buyers are indifferent about buying at that price or some sellers are indifferent about selling at that price, then interpret this condition as being satisfied if there is some possible value of demand at that price which is equal to some possible value of supply at that price.)
Ⓐ Any price greater than or equal to 7 and less than or equal to 10
Ⓑ Any price greater than or equal to 7 and less than or equal to 9
Ⓒ 8
Ⓓ 3
Ⓔ 9

Question 2: What is the maximum quantity exchanged when the price is such that supply equals demand?
Ⓐ 7
Ⓑ 4
Ⓒ 6
Ⓓ 5
Ⓔ 3

Question 3: What is the maximum surplus realisable in the market?
Ⓐ 29
Ⓑ 27
Ⓒ 23
Ⓓ 25
Ⓔ 21

Question 4: If the buyers grouped together and chose a single price which maximised their total buyer surplus, what price would they choose (assuming that any seller indifferent between selling and not selling actually sells and assuming that if there are two such prices they choose the highest)?
Ⓐ 1
Ⓑ 4
Ⓒ 6
Ⓓ 0
Ⓔ 3

Preamble: (You might find it helpful to visualise this problem by using one of the graphical grids provided.) Consider an individual with QUASI-LINEAR preferences between money, denoted by *m*, and the quantity, denoted by *q*, of a DISCRETE good. Suppose there is a market in which this DISCRETE good can be sold or bought at a fixed price. Suppose the price at the moment is 38.4. The individual is endowed with 5 units of the discrete good and 48 units of money. The individual's indifference curve through this endowment point is given by the equation $m = 240/q$.

Question 5: State whether the individual will be a buyer or a seller and how many units he or she will buy or sell at this price.
Ⓐ Sell 4 units
Ⓑ Sell 1 unit
Ⓒ Do nothing
Ⓓ Buy 2 units
Ⓔ Sell 2 units

Question 6: What will the individual's surplus be at this price?
Ⓐ 44.8
Ⓑ 20.8
Ⓒ 10.8
Ⓓ 50.8
Ⓔ 40.8

Preamble: (You might find it helpful to visualise this problem by using one of the graphical grids provided.) Consider an individual with quasi-linear preferences between money and the quantity of a CONTINUOUS good. Suppose there is a market in which the CONTINUOUS good can be sold or bought at a fixed price. Suppose the price is such that the individual's optimal decision is to buy 5 units. The individual is endowed with 5 units of the good and 48 units of money. The individual's indifference curve through this endowment point is given by the equation $m = 240/q$.

Question 7: What approximately is the price in the market and what approximately is the individual's surplus at this price?
Ⓐ 5.0 and 315
Ⓑ 4.0 and 12
Ⓒ 2.4 and 12
Ⓓ 6.2 and 312
Ⓔ 2.0 and 10

Preamble: Consider an individual whose preferences are either Perfect Substitutes, Perfect Complements or Cobb-Douglas with parameter α, allocating a given endowment between two goods

whose prices are *p* and 1 respectively. The individual's endowments of the two goods are 10 and 9 respectively. In the first situation the price *p* of Good 1 was 0.5 and the individual chose to consume 0 of Good 1 and 14 of Good 2. In the second situation the price *p* of Good 1 was 1/3 and the individual chose to consume 31 of Good 1 and 2 of Good 2. In a third situation the price *p* of Good 1 was 0.75.

Question 8: What are the individual's preferences and the value of the parameter *a*?
Ⓐ Perfect Substitutes with parameter 3
Ⓑ Cobb-Douglas with parameter 0.5
Ⓒ Perfect Complements with parameter 1
Ⓓ Perfect Substitutes with parameter 1 / 3
Ⓔ There is not enough information to tell

Question 9: What are the individual's gross demands for the two goods at the third price above?
Ⓐ 16 of Good 1 and 4.5 of Good 2
Ⓑ 0 of Good 1 and 16.5 of good 2
Ⓒ There is not enough information to tell
Ⓓ 8 of Good 1 and 10.5 of Good 2
Ⓔ 22 of Good 1 and 0 of Good 2

Preamble: Consider an individual whose preferences are either Perfect Substitutes, Perfect Complements or Cobb-Douglas with parameter *a*, allocating a given monetary income between two goods whose prices are p and 1 respectively. The individual's endowment of money is 98. In the first situation the price *p* of Good 1 was 1/3 and the individual chose to consume 73.5 of Good 1 and 73.5 of Good 2. In the second situation the price *p* of Good 1 was 1 and the individual chose to consume 49 of Good 1 and 49 of Good 2. In a third situation the price *p* of Good 1 was 1.25.

Question 10: What are the individual's preferences and the value of the parameter *a*?
Ⓐ Perfect Complements with parameter 2
Ⓑ There is not enough information to tell
Ⓒ Cobb-Douglas with parameter 0.5
Ⓓ Perfect Complements with parameter 1
Ⓔ Perfect Substitutes with parameter 1

Question 11: What are the individual's demands for the two goods at the third price above?
Ⓐ 50 of Good 1 and 35.5 of Good 2
Ⓑ 20 of Good 1 and 73 of Good 2
Ⓒ There is not enough information to tell
Ⓓ 43.55556 of Good 1 and 43.55556 of good 2
Ⓔ 20 of Good 1 and 98 of Good 2

Preamble: Consider competitive exchange of two goods, Good 1 and Good 2, between two Individuals A and B. A starts with an endowment of 12 units of Good 1 and none of Good 2. B starts with an endowment of 12 units of Good 2 and none of Good 1. Individual A has Perfect Complement Preferences with *a* parameter 2. Individual B has Cobb-Douglas Preferences with *a* parameter 1/3.(In answering this question you should note a convention that we use here: in order for a situation to be termed a competitive equilibrium we require that both individuals are STRICTLY better off than with they were with their initial endowments.)

Question 12: Determine whether a competitive equilibrium exists, and if so, determine the competitive equilibrium exchange rate.
Ⓐ There is not enough information to tell
Ⓑ Yes: exchange rate of 5 of good 1 for 2 of Good 2
Ⓒ There is not a competitive equilibrium
Ⓓ Yes: exchange rate of 2 of good 1 for 1 of Good 2
Ⓔ Yes: exchange rate of 3 of good 1 for 2 of Good 2

Question 13: If a competitive equilibrium exists, how many units of good 1 are exchanged?
Ⓐ There is no competitive equilibrium
Ⓑ 8
Ⓒ There is not enough information to tell
Ⓓ 4
Ⓔ 10

Question 14: If a competitive equilibrium exists, how many units of good 2 are exchanged?
Ⓐ 6
Ⓑ 4
Ⓒ 3
Ⓓ There is no competitive equilibrium
Ⓔ There is not enough information to tell

Question 15: Would dividing EQUALLY the initial endowments of the two goods be an efficient way of finally allocating the two goods to the two individuals?
Ⓐ There is not enough information to tell
Ⓑ There can never be enough information to tell
Ⓒ No
Ⓓ Yes

Preamble: Consider a perfectly competitive firm with a quadratic cost function $C(q) = a + bq + cq^2$ where the parameters *a, b* and *c* are given below (note that the firm has to incur its fixed cost *a* whether it produces any output or not). Suppose that the given price for its output is 18. The value of *a* is 12, the value of *b* is 1, and the value of *c* is 2.

Question 16: What is its profit maximising (loss minimising) output?
Ⓐ 3.25
Ⓑ 4.25
Ⓒ 10.25
Ⓓ 5.25
Ⓔ 0.25

Preamble: Consider a simple economy with two individuals, A and B, each of whom can produce both of two goods, 1 and 2. If A works full-time on Good 1, he or she can produce 10 units of Good 1; if A works full-time on Good 2, he or she can produce 8 units of Good 2; more generally, if he or she works a fraction *f* of his or her time on Good 1 and a fraction *(1-f)* of his or her time on Good 2 then he or she can produce a quantity 10*f* of Good 1 and a quantity 8*(1-f)* of Good 2. If B works full-time on Good 1, he or she can produce 8 units of Good 1; if B works full-time on Good 2, he or she can produce 8 units of Good 2; ; more generally, if he or she works a fraction *f* of his or her time on Good 1 and a fraction *(1-f)* of his or her time on Good 2 then he or she can produce a quantity 8*f* of Good 1

and a quantity 8*(1-f)* of Good 2. Suppose that they agree that they jointly want to produce 6 units of Good 1.

Question 17: Given their decision (above) on how much of Good 1 that they want to jointly produce, what is the maximum amount of Good 2 that the two individuals can produce?

Ⓐ 9.2
Ⓑ 12.2
Ⓒ 10.0
Ⓓ 11.2
Ⓔ 13.6

Aide-Memoire on Functions and their parameterisations

Perfect Substitutes with parameter *a*: $u(q_1, q_2) = q_1 + q_2 / a$

Perfect Complements with parameter *a*: $u(q_1, q_2) = \min(q_1, q_2 / a)$

Cobb-Douglas with parameter *a*: $u(q_1, q_2) = q_1^a q_2^{1-a}$