Summer Examinations 2015

ECN201315N

Module Title: Intermediate Microeconomics
Level: Five
Time Allowed: Two hours

Instructions to students:
- Enter your student number not your name on all answer books.
- Answer all of the questions.
- Question 1 carries 15% of the overall marks
  Question 2 carries 30% of the overall marks
  Question 3 carries 25% of the overall marks
  Question 4 carries 30% of the overall marks
- Only work recorded in the answer books will be assessed.
- Neither books nor notes may be taken into the examination.
- The use of a non-programmable calculator is permitted.

| No. of Pages | 3 |
| No. of Questions | 4 |
Answer all of the following four questions.

**Question 1**

**a.** Calculate the Marginal Rate of Substitution (MRS) for the following utility functions:

i.  \( U_1 = X \cdot Y \)

ii.  \( U_2 = 4X^{0.5} + 2Y^{0.5} \)

iii.  \( U_3 = 1/X^2 \)

**b.** Calculate the level of risk aversion according to the Arrow – Pratt formula for the following utility functions:

i.  \( U_1 = X^{0.5} / \alpha^{0.5} \)

ii.  \( U_2 = X \)

iii.  \( U_3 = \alpha - 2\beta + \gamma^{0.5} - X^{0.5} \)

**Question 2**

**a.** Imagine a consumer - worker who has a total time endowment of \( T = 100 \) hours per week. He/She can use these hours for work or for leisure. All the money that he/she will gain from the work will be used for consumption.

The Utility Function is 

\[ U = C^{0.5} R^{0.5} \]

where \( C \) is consumption of consumer goods and \( R \) is consumption of leisure. The wage rate is £20 per hour and the price of consumer goods is £1. Hours of labour supplied are denoted by \( L \), where \( L = T - R \).

i.  What is the maximum value of the consumer - worker’s income (full income)?

ii.  Find the utility-maximising levels of consumption and leisure. How much labour does the consumer - worker’s supply?

**b.** A consumer has utility function equal to \( U = X^{0.5} + Y^{0.5} \) and his expenditure function is given by \( E = P_X X + P_Y Y \). He wants to achieve utility equal to \( U^* \).

Calculate the Hicksian Demand Functions for \( X, Y \).
Question 3

Two firms produce with zero marginal cost. Demand satisfies the inverse demand function $P = 100 - Q_1 - Q_2$, where $Q_1$ is firm 1’s output and $Q_2$ is firm 2’s output.

a. If the two firms compete a la Cournot, write down marginal revenues, and so derive their reaction functions.

b. Calculate the equilibrium values (prices, production, profits) under the Cournot-Nash equilibrium.

Question 4

Explain what is:

a. Adverse Selection

b. Moral Hazard

and give some examples.

(maximum half page)

End of paper