UNIVERSITY COLLEGE LONDON

EXAMINATION FOR INTERNAL STUDENTS

MODULE CODE	:	**ECON2002**
ASSESSMENT PATTERN	:	**ECON2002A**
MODULE NAME	:	**Intermediate Microeconomics: Microeconomics of the Household**
DATE	:	**18 May 2016**
TIME	:	**10:00 am**
TIME ALLOWED	:	**2 hours**

This paper is suitable for candidates who attended classes for this module in the following academic year(s):

2015/16

TURN OVER

SUMMER TERM 2016

ECON2002: MICROECONOMICS OF THE HOUSEHOLD

TIME ALLOWANCE: 2 hours

Answer ALL questions from Part A on the Multiple Choice Question sheet. Answer TWO questions from Part B.

Part A carries 40 per cent of the total mark and questions in Part B carry 30 per cent of the total mark each.

In cases where a student answers more questions than requested by the examination rubric, the policy of the Economics Department is that the student's first set of answers up to the required number will be the ones that count (not the best answers). All remaining answers will be ignored.

PART B

Answer TWO questions from this section.

B.1 An economy consists of two individuals, Axel and Bjørn. Axel has risk-free wealth of W. Bjørn also has wealth W but there is a probability π that his wealth will be wiped out where $1 > \pi > 0$.

The two agree a contract under which Bjørn will pay Axel a premium γK in return for a promise from Bjørn to give Axel K in the event that Axel's wealth is lost. Each individual treats the premium rate γ as fixed when deciding how much insurance K to buy or sell.

With probability $1 - \pi$ their wealth levels are therefore $W + \gamma K$ and $W - \gamma K$ whereas with probability π their wealth levels are $W + (\gamma - 1)K$ and $(1 - \gamma)K$.

Each individual is an expected utility maximiser with logarithmic within-state utility $v(W) = \ln W$.

(a) Explain what is meant by risk aversion and why both individuals are averse to risk given these preferences.

(b) Insurance sold by Axel K_A and insurance bought by Bjørn K_B are therefore the solutions to

$$\max_{K_A} \{(1 - \pi) \ln (W + \gamma K_A) \; + \; \pi \ln (W + (\gamma - 1)K_A)\}$$

and

$$\max_{K_B} \{(1 - \pi) \ln (W - \gamma K_B) \; + \; \pi \ln ((1 - \gamma)K_B)\}.$$

Show that chosen K_A and K_B are $K_A = (\pi - \gamma)W/\gamma(\gamma - 1)$ and $K_B = \pi W/\gamma$.

(c) Explain why a Walrasian equilibrium in this economy is a premium rate γ^* such that $K_A = K_B$. Show that the equilibrium is $\gamma^* = 2\pi/(1 + \pi)$.

(d) What does it mean for insurance to be actuarially fair? Is equilibrium insurance in this economy actuarially fair? Discuss.

B.2 Individuals consume two goods, wine q_1 and cheese q_2, at prices p_1 and p_2. Total budget is denoted y.

Preferences are captured by the indirect utility function

$$v(y, p_1, p_2) = (y/p_1) + \ln(y/p_2).$$

(a) i. Write down and explain Roy's identity.

ii. Use Roy's identity to find the Marshallian demands and hence the budget shares of the two goods as functions of y, p_1 and p_2.

(b) i. Explain what a Laspeyres price index is.

ii. Suppose the price of wine goes from p_1^A to $p_1^B = \alpha_1 p_1^A$ and the price of cheese goes from p_2^A to $p_2^B = \alpha_2 p_2^A$ where $\alpha_1 > \alpha_2$. Show that the Laspeyres price index for someone with initial total budget of y is

$$L = \frac{\alpha_1 y + \alpha_2 p_1^A}{y + p_1^A}.$$

Is this higher for richer or poorer households? Discuss the reasons for this.

(c) Discuss whether the Laspeyres index is likely to overstate or understate the true rise in the cost of living. What difficulties would arise in calculating a true cost of living index for these preferences?

B.3 Individuals in an economy consume two goods, corn q_1 and cloth q_2. Prices of corn and cloth, p_1 and p_2, are both equal to 1. Individual incomes are y.

Individual preferences are described by the direct utility function

$$u(q_1, q_2) = q_1 + \ln q_2.$$

(a) Find the Marshallian demands for the two goods.

(b) The government is considering raising revenue by taxing corn at rate t. Assume that neither pretax prices nor income are affected by the nature of taxation of corn. In order to protect the poorest citizens the government decides to tax corn consumption only if it is above a threshold E. There are two alternative proposals:

- Minister A believes that if corn consumption exceeds E then the tax paid T should be levied on the whole of corn consumption, $T = tq_1$.
- Minister B believes that if corn consumption exceeds E then the tax should be levied only on the excess of corn consumption over E, $T = t(q_1 - E)$.

Which, if either, proposal gives rise to a convex individual budget set? Illustrate by drawing budget sets under each proposal.

(c) Suppose that the proposal of Minister B is adopted.

i. Show that an individual chooses to consume $q_1 < E$ if $y < 1 + E$.

ii. Show that an individual chooses to consume $q_1 > E$ if $y > 1 + t + E$.

iii. What happens to an individual if $1 + E < y < 1 + t + E$?