

UNIVERSITY COLLEGE LONDON

University of London

EXAMINATION FOR INTERNAL STUDENTS

For The Following Qualifications:–

B.Sc. B.Sc.(Econ)M.Sci.

Economics 1 (Combined Studies)

COURSE CODE : ECON1604

UNIT VALUE : 1.00

DATE : 04–MAY–06

TIME : 10.00

TIME ALLOWED : 3 Hours

ECONOMICS 1604: ECONOMICS 1

Please answer ALL questions in Section A (50%) and ONE question EACH from Sections B and C (25% each). All answers should be accompanied by a brief explanation or discussion. Correct but unexplained answers will not receive high marks.

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.

Section A. Answer ALL questions.

- A1** Suppose that the demand function for a good is $Q = a - bp$, and the supply function is $Q = c + dp$, where p is the price of the good, Q is the quantity demanded or supplied, and a , b , c , and d are all positive constants. Find the equilibrium price and quantity in terms of these four constants.
- A2** A consumer has a utility function $U(X, Y) = AX^\alpha Y^\beta$, where A , α , and β are positive constants. If the prices of the two goods are p_X and p_Y , respectively, and the consumer's income is M , then find her optimal consumption quantities in terms of the three constants and two prices.
- A3** Emily the Pirate consumes only cutlasses and parrots. Denote her annual consumption of cutlasses (in units) and parrots (in kg) by C and F , respectively. Her utility function for these two goods is $U(C, F) = CF$. Suppose that the prices of the two goods are $p_C = \text{£}2$ and $p_F = \text{£}1$ and that Emily's annual income from marauding the high seas is $\text{£}100$. Find Emily's optimal consumption bundle and then determine the minimum extra income she will need to attain the original utility level if the price of parrots doubles.
- A4** A firm manufactures output, q , according to the production function $f(L, K) = L^{0.5}K^{0.5}$, where L and K indicate the input of labour and capital, respectively. If the input prices are w and r , then determine the firm's long-run cost of production, $C(q)$ in terms of q , w , and r .
- A5** Assume that industry inverse supply and demand functions for a particular good are $p = Q$ and $p = 10 - Q$, respectively, where p is the

price of the good and Q is the quantity demanded or supplied. Calculate the deadweight loss associated with a £1 per unit subsidy on the good provided by the government.

- A6** What is the money multiplier? What features in the economy may cause its value to change over time?
- A7** The government is considering lowering spending to reduce the public deficit. What is likely to happen to output and investment in the short, medium and long run?
- A8** Write down the Philips curve relation between inflation, expected inflation and unemployment. Explain the consequences of this relation in words. Given the Lucas critique, do you think the central bank should announce in advance a policy to reduce inflation? Explain your answer.
- A9** Explain why unanticipated changes in monetary policy have unambiguous effects on stock prices. Explain why unanticipated changes in fiscal policy have ambiguous effects on stock prices.
- A10** You are given that, in year t , the 1-year domestic nominal interest rate is i_t , the 1-year foreign nominal interest rate is i_t^* and the nominal exchange rate between domestic and foreign currency is E_t . Derive the interest parity condition and comment on any assumptions you have made about investors' behaviour. Explain for what reasons the interest parity condition may not hold in reality.

Section B. *Answer ONE question.*

B1 The Chancellor of the Exchequer, Gordon Brown, requests your assistance in determining whether a specific tax on mobile phones or an income tax is a better way to raise government revenue from the perspective of a representative consumer. In your analysis, you may assume that a representative consumer has smooth and convex indifference curves summarised by the utility function $U(X, Y)$, where X is the annual consumption of phones and Y is the annual consumption of all other goods. The prices of these two goods are denoted p_X and p_Y . Proceed with the analysis in the following manner:

- (a) Determine the representative consumer's budget constraint in the absence of any taxes. Let M denote the representative consumer's annual income before any taxes.
- (b) If a specific tax of τ per phone is imposed, then how does the budget constraint from part (a) change, if at all? Please explain your answer.
- (c) Suppose that if the specific tax of part (b) is implemented, then the representative consumer's optimal consumption bundle is (X^*, Y^*) . What is the amount of tax revenue, R , raised by the government?
- (d) Now suppose that instead of the tax regime of part (b), the government implements an income tax only. If the government is to raise the same amount of tax revenue with an income tax as it does with a specific tax on phones, then what is the representative consumer's budget constraint?
- (e) Let (X^{**}, Y^{**}) denote the representative agent's optimal consumption bundle with the income tax regime of part (d). Is the consumer better off with the specific tax or the income tax? Illustrate your answer using a graph.

B2 The industry inverse demand function for a particular good is $p = 24 - Q$, where p is the price of the good and Q is the industry-wide quantity supplied. There are four identical firms in this perfectly competitive industry, each with cost function $C(q) = 16 + q^2$, where q is each firm's output and $Q = 4q$.

- (a) Determine the average cost, average variable cost, and marginal cost of each firm.
- (b) Determine the short-run industry supply curve in terms of p .
- (c) Find the equilibrium price and quantity in this industry as well as the profit earned by each firm.
- (d) Based on the amount of profit earned by each firm, is there any incentive for firms to enter or exit this industry in the long run, *ceteris paribus*? Please explain your answer.
- (e) Now assume that all four firms merge and act as a monopolist with industry supply curve as determined in part (b). What is the profit-maximising price charged by the monopolist? Relative to the perfectly competitive structure, what is the deadweight loss associated with the monopoly?

Section C. Answer ONE question.

- C1** (a) What is the mechanism underlying the aggregate demand schedule? Under what circumstances may this mechanism fail?
- (b) Consider the following shocks to a closed economy that is initially at medium run equilibrium: (i) an increase in consumer confidence and (ii) a contraction in money supply. Using diagrams of both IS-LM and AS-AD models, illustrate and also describe in words how these shocks dynamically alter production, interest rates and prices over the short run, and the medium run.
- C2** Suppose you are asked to model unemployment in an economy with search frictions. Unemployed workers move into jobs at a rate f , which depends on job vacancies created (v), a job search effectiveness parameter (i), and an index of mismatch (mm). Employed workers lose their jobs at a rate s . The labour force (L) is taken to be constant.
- (a) Derive expressions for the unemployment inflow and outflow, and the evolution of the unemployment rate. Obtain the steady state unemployment rate, and explain how the resulting structural relationship between the unemployment rate and the number of vacancies created leads to the Beveridge curve.
- (b) Explain how the labour market determines the relationship between the number of vacancies created and the unemployment rate (the job creation curve).
- (c) Take $f = v + i - mm$, $i = 0.1$, $mm = 0.2$ and $s = 0.1$. Assuming that the job creation curve is described by $v = 10u$, derive equilibrium levels for u and v .
- (d) Suppose now that, due to some economic event, there are increases in both the separation rate and the mismatch rate, so that $s = 0.4$ and $mm = 0.5$. Describe what happens to the Beveridge and job creation curves. What would be the new equilibrium levels for the unemployment rate and the number of vacancies created?
- (e) Give some examples of possible economic events that might lead to increases in either s , mm or both. Suggest any possible remedial actions that the government might consider in such an event.