

AUSTRALIAN NATIONAL UNIVERSITY

First Semester Examination - 2006

PUBLIC ECONOMICS – THEORY (P) (ECON2131)

Study Period : 15 minutes

Time Allowed : 3 hours

Permitted Material: Calculators – non programmable

ANSWER THE FOLLOWING 6 QUESTIONS EACH QUESTION IS WORTH 10 FOR A TOTAL OF 60

QUESTION 1

A consumer views two goods as perfect substitutes.

- (a) Sketch the indifference curves of the consumer. (2 points)
- (b) Provide the definition of Pareto efficiency. If an economy is composed of two consumers with these preferences, demonstrate that any allocation is Pareto efficient. (4 points)
- (c) If an economy has one consumer who views its two goods as perfect substitutes and a second that considers each unit of good 1 to be worth 2 units of good 2, find the Pareto efficient allocations. (4 points)

QUESTION 2

Consider two individuals (A and B) and two goods (X , private good, and G , public good). Individuals' preferences are represented by utility functions:

$$U^A = U(X^A, G), U^B = U(X^B, G).$$

- (a) Derive the condition for the efficient supply of public goods by solving the following maximization problem:

$$\text{Max}_{X^A, X^B, G} W(U^A, U^B) \text{ s.t. } X^A + X^B + c(G) = R,$$

where $c(G)$ represents the cost of producing G measured in units of good X (which is assumed to be the numeraire), and R is the amount of resources available. (7 points)

- (b) Explain in detail the intuition behind. (3 points)

QUESTION 3

- (a) If there is uncertainty over the position of the marginal cost curve, direct controls might be superior to prices. Show graphically a case in which direct controls are superior to prices. (Hint: In an (output, price)-space represent actual marginal cost, which could be either high or low, together with the average position of the marginal cost curve and the marginal benefit) (6 points)
- (b) Why does uncertainty about the position of the marginal benefit curve have no implications for the prices versus quantities debate? (4 points)

QUESTION 4

Consider a monopoly with a horizontal marginal cost schedule. If a tax t is imposed on the monopolist, show that:

- (a) Price increases by exactly half the tax if the monopolist faces a linear demand curve $p = a - bQ$. (4 points)
- (b) Price increases by a multiple $\left[1/(1 - 1/\eta^d)\right]$ if the monopolist faces a demand schedule with constant elasticity η^d . (6 points)

In both cases, provide also a graphical representation.

QUESTION 5

Consider a simple earned income tax credit (EICT): a low-wage individual receives a wage subsidy up to some level of earned income, and faces a tax beyond a certain *higher* level.

- (a) Provide a graphical representation and discuss the income and substitution effects at the resulting intervals. (Put leisure on the horizontal axis, and disposable income on the vertical axis) (6 points)
- (b) Discuss the issue of participation versus hours decisions. (4 points)

QUESTION 6

- (a) Explain what we mean by a federal (i) block grant, (ii) categorical grant and (iii) matching grant. (2.5 points)
- (b) Consider a community that makes different spending decisions when offered a block grant than when offered a categorical grant of equal size.
 - (i) Does the community reach a higher level of social welfare under the block grant?
 - (ii) Does the categorical grant elicit more spending in the designated category than the block grant does?
 - (iii) Does the categorical grant elicit a level of community expenditures in the designated category equal to the size of the grant?

For each (i) to (iii), provide a detailed justification and a graphical representation. (2.5 points for each (i) to (iii))

