

AUSTRALIAN NATIONAL UNIVERSITY

Second Semester Examination - 2005

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) State the conditions for exchange, production and product-mix efficiency. Provide an intuitive explanation and a graphical representation for each of them. (6 points)
- (b) The First Welfare Theorem claims that competitive markets result in a Pareto efficient outcome. Explain in detail why. (2 points)
- (c) State the Second Welfare Theorem. What are the implications for the issues of efficiency and distribution? (2 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) An important class of externalities arises from what is referred to as common resource problems. Provide an example of this kind of problem in which an inefficient use of resources results and support your explanation with a graph. (5 points)
- (b) Another class of externalities arises when external effects create increasing returns to scale. Provide an example for this kind of problem and support your explanation with a graph. (5 points)

QUESTION 4

Suppose that the demand curve for a particular commodity is $Q^D = a - bP$, where Q^D is the quantity demanded, P is the price, and a and b are constants. The supply curve for the commodity is $Q^S = c + dP$, where Q^S is the quantity supplied and c and d are positive constants.

- (a) Find the equilibrium price and output as functions of the constants a , b , c and d . (2 points)
- (b) Suppose now that a unit tax of u dollars is imposed on the commodity. Show that the new equilibrium consumer and producer prices are the same regardless of whether the tax is imposed on producers or buyers of the commodity. (6 points)
- (c) Use the example to discuss the concepts of tax burden and tax incidence. (2 points)

QUESTION 5

If savings do not respond to changes in the interest rate, does it mean that there is no deadweight loss associated with the taxation of interest? Justify in detail your answer and provide a graphical representation. (10 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))

