

**Economics of Public Policy**

---

Time Allowed: 1.5 hours

Answer **TWO** questions. All questions carry equal marks. Answer each question in a separate answer booklet.

Read carefully the instructions on the answer book provided and make sure that the particulars required are entered on each answer book. If you answer more questions than are required and do not indicate which answers should be ignored, we will mark the requisite number of answers in the order in which they appear in the answer book(s): answers beyond that number will not be considered.

---

1. Take an economy with two consumers, denoted A and B, one private good,  $x$ , and one public good,  $G$ . Let each consumer have an income equal to  $M$ . The prices of both private and public good are 1. Consumers' utility functions are:

$$U^A = \log x^A + \log G, \quad U^B = \log x^B + \log G.$$

- (a) Assume that the public good is privately provided so  $G = g^A + g^B$ , where  $g^A$  and  $g^B$  are A and B's voluntary contributions towards the provision of  $G$ . Eliminating  $x^A$  from A's budget constraint calculate  $dg^B/dg^A$  and find the locus of points along which the indifference curves of A is horizontal, use this to sketch the indifference curve of A. **(10 marks)**
- (b) Calculate A's choice of  $g^A$  to maximise utility, given all the possible choices of B in term of  $g^B$ . Repeat the same exercise for B and calculate the level of private provision of the public good. **(20 marks)**
- (c) Calculate the optimal level of  $G$  that maximises the utilitarian social welfare function, and has the cost equally allocated. Contrast this with the private provision level. **(20 marks)**
-

- 
2. Consider a consumer endowed with  $l$  unit of labour who consumes two commodities, denoted 1 and 2. In the absence of taxation the consumer has the budget constraint  $p_1x_1 + p_2x_2 = wl$ , where  $w$  is the wage rate,  $p_1$  and  $p_2$  are commodities' pre-tax-prices, and  $x_1$  and  $x_2$  represent commodities' consumption.
- (a) Show that an ad valorem tax levied at a rate  $t$  on both commodities and on labour raises no revenue. Explain the fact. **(30 marks)**
- (b) Show the equivalence between a uniform commodity tax at rate  $t$  on the two commodities and an income tax at rate  $t/(1+t)$  on wages. **(20 marks)**
- 
3. (a) Explain what is meant by the destination and origin principles of commodity taxation. Give examples of situations where each of the two applies. What are the efficiency properties of these two principles? **(20 marks)**
- (b) Explain why tax competition between different countries can only occur under the origin principle. What determines the equilibrium levels of tax? Is there any evidence that commodity taxation occurs in practice? **(30 marks)**
- 
4. (a) What is the difference between source and residence-based taxes on capital income? What is capital import neutrality and capital export neutrality? **(20 marks)**
- (b) Give a brief exposition of the Zodrow-Mieskowski model of capital tax competition. In what way (if any) is the equilibrium level of taxation and public good provision inefficient? **(30 marks)**
-