

National University of Lesotho
B.A Examinations
EC4309: Public Sector Economics

JANUARY 2024

100 MARKS

3 HOURS

INSTRUCTION:

Answer **any four** Questions

Question 1

- a. In the presence of externalities how can the private market attain Pareto optimum or near Pareto efficiency? [7]
- b. The private marginal benefit of a product's consumption is $PMB = 360 - 4Q$ and the private marginal cost associated with its production is $PMC = 6Q$. Furthermore, the marginal (external) damage associated with this good's production is $MD = 2Q$.
 - i. How many more units of this product will the free market produce than is socially optimal? [4]
 - ii. To correct the externality, the government decides to impose a tax of T per unit sold. What tax T should it set to achieve the social optimum? [8]
 - iii. Derive the amount of revenue raised by the tax T found in ii.) above [3]

Question 2

- a. Suppose 10 people each have the demand $Q = 20 - 4P$ for streetlights and 5 people have the demand $Q = 18 - 2P$ for streetlights. The cost of building each streetlight is 3. If it is impossible to purchase a fractional number of streetlights, how many streetlights are socially optimal? [4]
- b. Consider the following economy with two individuals A and B. The two individuals have the same income: $m = 100$. However, preferences of individual A are given by

$$U^A = 6\ln(G) + z_A$$

While preferences of individual B are given by:

$$U^B = 4\ln(G) + z_B$$

Suppose that one unit of the private good z can be transformed into five units of public good G . Compute the Pareto efficient level of the public good G . [5]

- c. Mokhosi's demand for Trout Fish (private good) is $Q = 20 - 2P$, and Monoko's demand is $Q = 10 - P$.
 - i. Write down an equation for the social marginal benefit of the consumption of Trout Fish if Trout Fish are private goods. [4]
 - ii. Write down an equation for the social marginal benefit of the consumption of Trout Fish if Trout Fish are public goods. [4]
- d. For each of the following goods, explain whether it possesses the nonexclusive property, the non-rival property, or both. If the good does not have the characteristics of a public good but is nevertheless produced by the government, can you explain why?
 - i. Free primary education [2]
 - ii. College education [2]
 - iii. Public road [2]
 - iv. National defence [2]

Question 3

By using diagrams and examples, explain the differences between the following market failures: Negative Consumption Externality and Positive Production Externality. In each instance, explain why the market fails and recommend at least one possible policy action to correct the market failure. [25]

Question 4

- a. What determines the efficient level provision of a public good? Use demand and marginal cost curves to illustrate your answer. [10]
- b. Public sector expenditure in sub-Saharan African countries has risen from about 18% of GDP in the 1980s to about 30% of GDP in the most recent period. Critically examine the five underlying reasons for the growth of public expenditures in the case of sub-Saharan Africa. [15]

Question 5

Consider a free market with a demand equal to $Q = 1200 - 10P$ and supply equal to $Q = 20P$.

- a. What is the value of social surplus? [4]
- b. Suppose further that the government imposes a M10 per unit subsidy on the consumption of the good.
 - i. What is the social surplus now? [6]
 - ii. Why is there a deadweight loss associated with the subsidy? [4]
 - iii. What is the size of this loss? [3]
- c. Show graphically the consumer surplus, producer surplus and deadweight loss, before and after the subsidy [8]

Question 6

- a. In order to make college more affordable for students from families with fewer resources, a government has proposed allowing the student of any family with less than M50,000 in savings to attend public universities for free. Discuss the two direct and possible two indirect effects of such a policy. [4]
- b. Since the free market (competitive) equilibrium maximizes social efficiency, why would the government ever intervene in an economy? [6]
- c. The market can fail and the government can also fail. By using specific examples, discuss five market failure issues in Lesotho. [15]