University of Athens   **Academic year 2025-2026**
Department of Economics
Master's program in Applied Economics

Course: Economic Policy
Assignment no. 1:

Answer all questions. Deadline 17 April 2026

Question 1.

Since the free market (competitive) equilibrium maximizes social efficiency, why would the government ever intervene in an economy?

Question 2

Consider a firm with no fixed costs, but continuously increasing marginal costs (*MC*). The demand curve is D=6-Q, and the supply S=Q. The variable *Q* denotes quantity, while *P* denotes price.

a) Assume initially that the firm uses marginal cost pricing (as in competitive market equilibrium). Find *Q* and *P* in this case. How big is the firm's profit? How big is the producer surplus? How big is the consumer surplus? (Assume that the compensated demand curve is identical to the ordinary demand Find social welfare as the sum of the consumer surplus and the producer surplus.)
b) Now assume that the firm behaves like a monopolist. What is the monopoly output and price? What is the firm's profit? How big is the producer surplus? How big is the consumer surplus? Find social welfare in monopoly.
c) Compare your findings in a) and b) and comment briefly.
d) Calculate the deadweight loss resulting from monopoly in this case. Compare the deadweight loss under monopoly and perfect competition.

Question 3.

There are three consumers of a public good. The demands for consumers are as follows:

$$p_1 = 50 - G$$
$$p_2 = 110 - G$$
$$p_3 = 150 - G$$

where *G* measures the number of units of the good and p_i the price in euros. The

marginal cost of the public good is €190.

a. What is the optimal level of provision of the public good? Illustrate your answer with a

graph.

b. Explain why the public good may not be supplied at all because of the free-rider problem.

c. If the public good is not supplied at all, what is the size of the deadweight loss arising from this market failure?

Question 4.

Suppose that demand for a product is $Q = 1,200 - 4P$ and supply is $Q = -200 + 2P$. Furthermore, suppose that the marginal external damage of this product is €8 per unit. How many more units of this product will the free market produce than is socially optimal? Calculate the deadweight loss associated with the externality.

Question 5.

We add the demands of private goods horizontally but add the demands of public goods vertically when determining the associated marginal benefit to society. Why do we do this and why are the procedures different for public and private goods?

Question 6.

It is known that some fraction d of all new cars are defective. Defective cars cannot be identified as such except by those who own them. Each consumer is risk neutral and values a non-defective car at €16,000. New cars sell for €14,000 each, and used ones for €2,000. If cars do not depreciate physically with use, what is the proportion d of defective new cars?

Question 7

There are two types of drivers on the road today. Speed Racers have a 5% chance of causing an accident per year, while Low Riders have a 1% chance of causing an accident per year. There are the same number of Speed Racers as there are Low Riders. The cost of an accident is €12,000.

a. Suppose an insurance company knows with certainty each driver's type. What premium would the insurance company charge each type of driver?

b. Now suppose that there is asymmetric information so that the insurance company does not know with certainty each driver's type. Would insurance be sold if:

    i. Drivers self-reported their types to the insurance company?

    ii. No information at all is known about individual driver's types?

If you are uncertain whether insurance would be sold, explain why.

Question 8.

Answer whether the following statements are true or false

a) Because the free market delivers efficient outcomes, the government should not intervene in the economy.

b) Evaluate the following statement: "Since pollution is bad, it would be socially optimal to prohibit the use of any production process that creates pollution."

c) Is it true that in a market where there is a separating equilibrium, different types of agents make different choices of actions?

Question 9

Suppose that a firm's marginal production costs are given by MC = 10 + 3Q. The firm's production process generates a toxic waste, which imposes an increasingly large cost on the residents of the town where it operates: the marginal external cost associated with the Qth unit of production is given by 6Q. What is the marginal private cost associated with the 10th unit produced? What is the total marginal cost to society associated with producing the 10th unit (the marginal social cost of the 10th unit)?

Question 10.

What negative externalities arise when an individual does not have health insurance?