

Solution to **SAMPLE MICROECONOMICS EXAMINATION**
ECON 1000 V
INSTRUCTOR: SADAQUAT JUNAYED
TIME: 3 HOURS. TOTAL MARKS: 100

Part A: Multiple Choice

Review quizzes

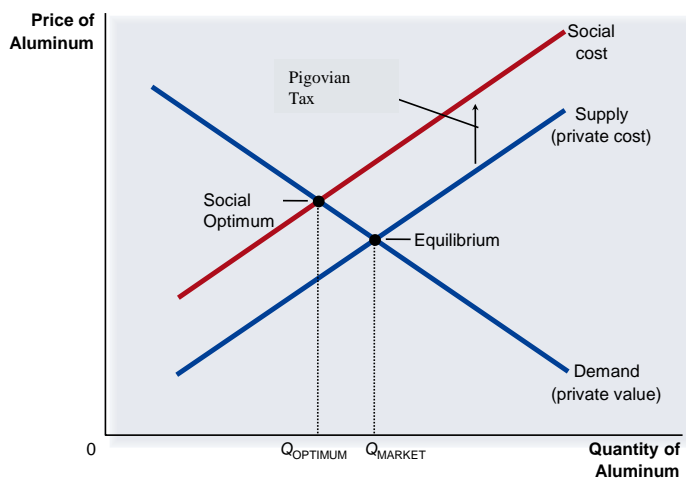
Part B: Short Answer Questions

1. ANS:

Externality is internalized when the parties to a market exchange have appropriate incentives to take account of the external effects of their actions. When externality is internalized, the parties to a market exchange perceive the external cost or benefit as a "cost" or "benefit" that accrues to them as part of the market exchange.

One way of internalizing a negative externality is through a unit tax (Pigovian tax) or subsidy on production and/or consumption. Government can impose taxes on activities that have negative externalities (e.g. production of aluminum that creates pollution) and can provide subsidy to activities that have positive externalities (e.g. education that imparts social benefit in addition to private benefits).

For example, if production of Aluminum results in a deadweight loss to the society due to pollution then a Pigovian tax can be imposed on the producers of Aluminum to reduce equilibrium quantity to the socially desirable quantity.



In the above figure the Pigovian tax is the vertical distance between the social cost curve and the private cost (supply) curve. In the presence of this Pigovian tax, aluminum producers take into account the full social costs of pollution, rather than just their private cost, when deciding how much aluminum to supply. Tax now makes them pay for the external costs in addition to their private costs. The equilibrium quantity produced moves from Q_{MARKET} to Q_{OPTIMUM} . Thus the market outcome is now the same as the socially optimal or surplus maximizing outcome. *[For a more detailed discussion of this example please see the textbook].*

Imposition of tax or subsidy is not the only way to internalize externality. Instead of imposing tax/subsidy, government can also regulate industries/sectors by making certain behaviors either required or forbidden. Also there could be private solutions where private parties can engage in mutually beneficial transactions to mitigate the problem of externality.

[Instead of the above example of Pigovian tax on Aluminum production, you can provide example of a 'private solution' or 'government regulation'. See the textbook.]

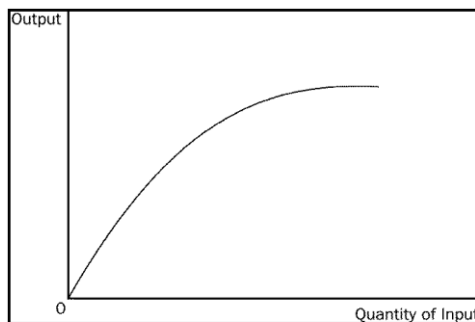
2. ANS:

		Rival?	
		Yes	No
Excludable?	Yes	Private Goods <ul style="list-style-type: none"> • Ice-cream cones • Congested toll roads 	Natural Monopolies <ul style="list-style-type: none"> • Fire protection • Cable TV • Uncongested toll roads
	No	Common Resources <ul style="list-style-type: none"> • Fish in the ocean • The environment • Congested nontoll roads 	Public Goods <ul style="list-style-type: none"> • National defense • Knowledge

3. ANS:

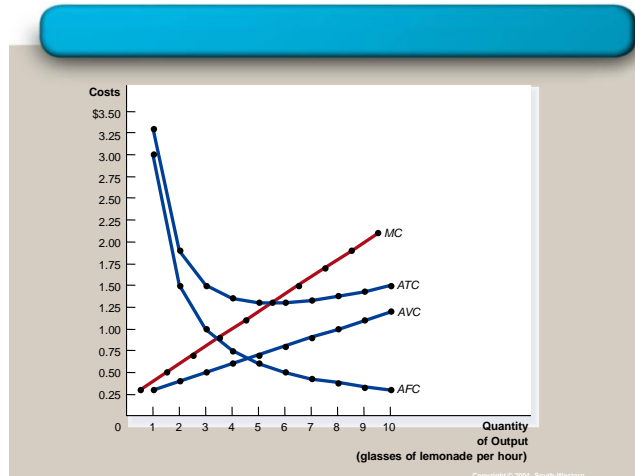
a. The production function depicts a relationship between output and a given input.

Marginal product is the amount of extra output that is produced if an additional unit of the input is employed.



The above figure shows output increasing, but at a decreasing rate as inputs increase. Thus this is the graph of a production function that exhibits diminishing marginal product because, as the concave shape of the curve implies, the additional output produced by an additional unit of input (i.e. marginal product) decreases if we keep on increasing the input.

b:
 When average total cost curve is falling it is necessarily above the marginal cost curve. If the average total cost curve is rising, it is necessarily below the marginal cost curve. Look at the following figure and explanation underneath:



Average total cost equals total cost (variable cost + fixed cost) divided by the quantity produced. Marginal cost is the additional cost incurred for producing an additional unit of output. As long as marginal cost is less than average total cost, that is as long as cost of producing an additional unit of output is less than the average cost, the average cost will be decreasing for any additional unit of output. Conversely, if cost of producing an additional unit of output is greater than the average cost, then the average cost will be increasing for any additional unit of output.

4. ANS:

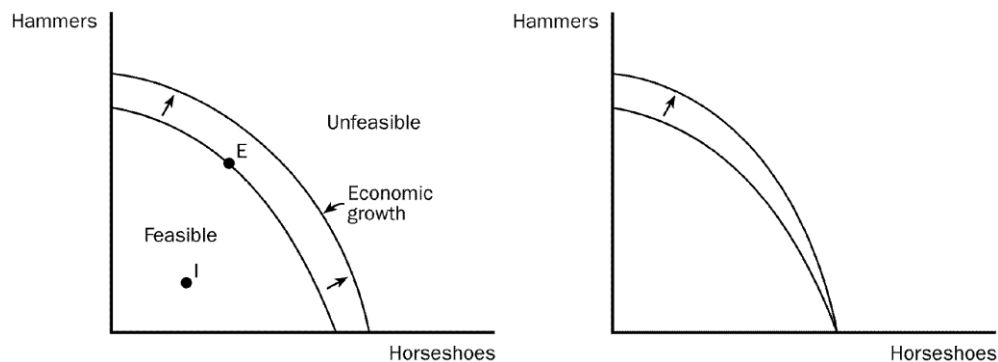
Two reasons: (i) Some resource used in production may be available only in limited quantities and (ii) firms may have different cost structures.

The example provided in the text for the first reason is the market for farm products. As more people become farmers, the price of land is bid up since its supply is limited. As the price of farm land is bid up, the cost of all farmers in the market rises.

The example used to support the second reason is the market for painters. Anyone can enter the market for painting services, but not everyone has the same costs because some painters work faster than others. Note that in the case of different cost structures between firms, although the marginal firms (i.e. firms that have higher cost and would exit the market if the price were any lower) earn zero profit, the firms with lower cost earn positive profit even in the long run!

[The above gives you just the gist, see the textbook for a more thorough answer]

5. ANS:



Add explanation of the above picture as you see fit...

6. ANS:

a. Equate demand and supply equations:

$$Q_s = Q_d \\ \Rightarrow P^* = 60$$

Substitute P^* into either Q_s or Q_d to get $Q^* = 280$.

Thus prior to the tax, the equilibrium price would be \$60 and the equilibrium quantity would be 280.

b. Equate new demand equation with the supply equation:

$$400 - 2P - T = 100 + 3P \\ \Rightarrow 400 - 2P - 15 = 100 + 3P \\ \Rightarrow P^{*'} = 57$$

After the tax is imposed, $P^{*'}$ is the price received by sellers. To get quantity sold ($Q^{*'}$) substitute $P^{*'}$ into either supply or in the new demand equation. Thus $Q^{*'}$ would be 271. The price paid by buyers would be $P^{*' + 15} = \$72$.

The answer shows three obvious facts. First, buyers pay more with a tax (\$72 instead of \$60) and second, sellers receive less with a tax (\$57 instead of \$60). Third, the size of the market shrinks when a tax is imposed on a product.

ECON 1000 V – MULTIPLE CHOICE ANSWER SHEET

Name: *Student's First and Last Name*

Signature: *Signature*

Student Number: *Student Number*

Write the letter that corresponds to your answer in CAPITAL letters. Make sure your answers are CLEARLY LEGIBLE.

Question Number	Answer
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