Econ 107 Midterm 2, July 17, 2025. 100 minutes

Closed notes and books. Turn of cell-phones. No calculators or electronics of any kind. No questions during exam. If a question asks for an explanation, answers without explanation will not get any credit. Show your work. Good luck!

| 1 | 2 | 3 | 4 | 5 | Total |
|---|---|---|---|---|---|
| 20 | 20 | 20 | 20 | 20 | 100 |
| | | | | | |

1. Consider the market for electricity production using carbon fuels. Market demand function for electricity is given by $Q_D(P)=8-0.5P$ and market supply function for electricity is given by $Q_S(P)=2P-2$ where q is quantity of electricity in units and P is TL/unit. Electricity production using carbon fuels causes air pollution which results in increased health costs for consumers, producers and others. Suppose that marginal costs of air pollution to <u>others</u> are 3TL/unit.

a. Find the free market (no government) equilibrium quantity and price. Is this socially efficient (total economic surplus maximizing) quantity? Explain.

b. Find the socially efficient quantity. Show the deadweight loss at the free market equilibrium in a graphical analysis.

2. Consider a producer with the following production function. q=2L where 2 is the quantity of capital (in units) fixed in the short run and L is the quantity of labor (in units) and q is the quantity of output produced (in units). Suppose that the price of labor (w) is 4TL/unit of labor and price of capital (r) is 6TL/unit of capital.

   Fill in the following table

| L | q | Marginal product of labor | Marginal cost | Fixed cost |
|---|---|---|---|---|
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |

3. Consider each of the following market pairs. Which market is more likely to be perfectly competitive? Explain your reasoning.

a. Market for taxi services vs. hair salon (kuaför) services.

b. Market for Local coffee shops vs. Market for National coffee chains

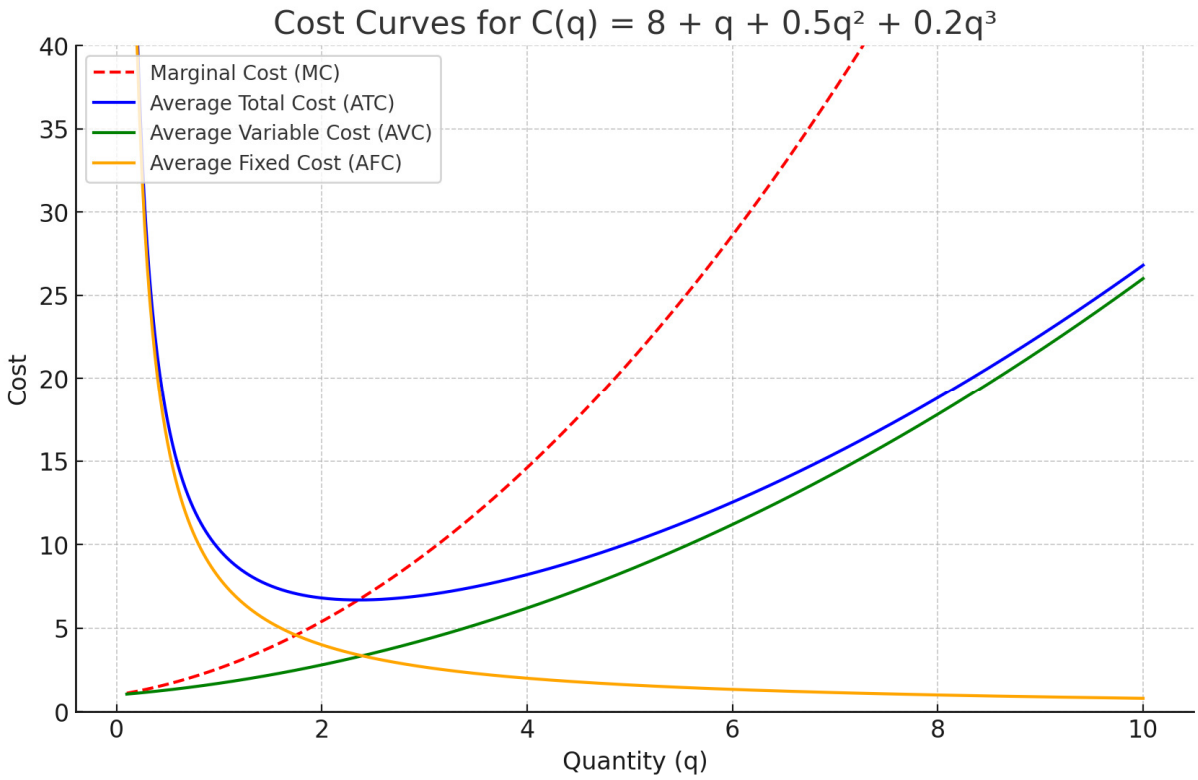
4. Below graph shows average total cost curve ATC average variable cost curve AVC and marginal cost curve MC of the producer and average fixed cost AFC of a producer in the long-run. This question will ask you to provide answers on the graph. Please read all parts carefully and then mark the relevant points on the graph. A messy graph may lose you points if your answer cannot be clearly understood.

a. If market price is 15TL/unit how much will this firm produce in the long run? (You do not have to find the exact quantity you can show it on the graph below.) Show the area that represents profits if there are any.

b. If market price is 5TL/unit how much will this firm produce in the long run? (You do not have to find the exact quantity you can show it on the graph below.) Show the area that represents profits if there are any.

c. Draw the long-run supply curve.

d. If market price is 15 TL/unit draw the marginal revenue curve facing this producer.




5. Consider the market for hazelnuts (fındık). Assume there are no taxes or price controls initially and the market is perfectly competitive. Market demand function is by $Q_D(P)=12-0.5P$ and market supply function is by $Q_S(P)=0.5P-4$ where Q denotes quantity (units) of hazelnuts and P denotes price in TL per unit.

a. Suppose the government imposes a price ceiling of 14TL/unit. What is quantity traded? Is there excess demand or excess supply? If so how much?
b. Is there deadweight loss due to price celing? If yes, draw supply and demand graphs and show the area that represents deadweight loss at the price floor on your graph.
c. How would your answer change to parts a and b if price ceiling was 18TL/unit?

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You can use space below for calculations.