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Correct Answer:

(a) As shown on the graph, MSC>MPC indicates the existence of a negative externality.

(b) The socially optimal quantity is Q₂ because MSB=MSC at this output level.

(c) The profit-maximizing quantity is Q₁ because MR=MPC at this output level. To produce the socially optimum quantity, the government should grant the monopolist a per-unit subsidy of $3.00.

(d) The equilibrium quantity for the perfectly competitive industry is Q₃ because MPC = D(MSB) at this output level. To produce the socially optimal quantity, the government should levy a per-unit tax of $5.00 on firms in this industry.

Scoring Guidelines: 12 points (2+2+4+4)

(a) 2 points:
   1 - Identifying negative externality
   1 - (Marginal) social cost is higher than (marginal) private cost, (M)SC>(M)PC
   **Contingent on negative externality as correct assertion

(b) 2 points:
   1 - Identifying Q₂
   1 - Marginal social benefit equals marginal social cost (D=MSC or P=MSC)

(c) 4 points:
   (i) 1 - Identifying Q₁
       1 - At Q₁, marginal private cost equals marginal revenue (MPC=MR or MC=MR)
   (ii) 1 - Subsidize the firm
   (iii) 1 - $3 per unit
       **Contingent on subsidy as correct assertion in (c)(ii)

(d) 4 points:
   (i) 1 - Identifying Q₃
       1 - Marginal social benefit equals marginal private cost
       D=MPC or MSB=MPC
   (ii) 1 - Tax the industry
   (iii) 1 - $5 per unit
       ** Contingent on tax as correct assertion in (d)(ii)
Question 2

Correct Answer:

(a) As shown on the graph, P₂ and Q₂ were the price and quantity of oil before trade in the US market.

(b) The amount of oil imported into the US market after trade would be equal to Q₃ - Q₁. US production drops to Q₁ but quantity demanded rises to Q₃.

(c) The triangle P₂KG represents consumer surplus before trade, while triangle P₀KH represents consumer surplus after trade.

(d) The triangle P₁P₂G represents producer surplus before trade, while triangle P₁P₀J represents producer surplus after trade.

(e) The triangle JGH shows the net gain in total surplus from trade.

Scoring Guidelines: 8 points (2+1+2+2+1)

(a) 2 points: (Pre-trade)
   1 - Identifying P₂
   1 - Identifying Q₂

(b) 1 point: (Imports) Identifying (Q₃ - Q₁) or (H-J)

(c) 2 points: (Consumer surpluses)
   1 - Identifying P₂KG (before)
   1 - Identifying P₀KH (after)

(d) 2 points: (Producer surpluses)
   1 - Identifying P₁P₂G (before)
   1 - Identifying P₁P₀J (after)

(e) 1 point: (Net gain in surplus) Identifying JGH
Correct Answer:

(a) The correct graph for a monopolistically competitive firm will show a downward-sloping D curve with a downward-sloping MR curve below it. The firm’s price and output would be found at the equality of MR and MC. In the long run, the ATC curve is tangent to the demand curve and equal to price directly above the output level at which MR=MC.

(b) When the fixed cost decreases, MC is not affected so that the output and price remain constant. Economic profit increases since the ATC falls.

Scoring Guidelines: 8 points (4+4)

(a) 4 points:
1 - Graph with a downward-sloping demand curve with correctly labeled axes
1 - Downward-sloping marginal revenue curve below the demand curve
1 - Q from MR = MC and P from Demand directly above Q
1 - Long-run equilibrium, AC (or ATC) tangent to Demand at Q

(b) 4 points:
1 - Individual firm’s output level does not change
1 - License fee is a fixed cost, thus it does not affect the firm’s marginal cost
1 - Economic profits increase
1 - Explanation

**Contingent on b(i)**

If Q does not change in b(i), TC or ATC decrease is sufficient.
If Q changes in b(i), then “correct” explanation of how TR/TC or AR/ATC is affected is necessary.