**Solution (Assignment 9)**

**I/ Problems**

**Problem 1**

You are given the following cost data of a firm operating in a perfectly competitive market:

|  |  |  |  |
| --- | --- | --- | --- |
| **Q** | **TFC** | **TVC** | **MC** |
| 0 | 12 | 0 | - |
| 1 | 12 | 5 | 5 |
| 2 | 12 | 9 | 4 |
| 3 | 12 | 14 | 5 |
| 4 | 12 | 20 | 6 |
| 5 | 12 | 28 | 8 |
| 6 | 12 | 38 | 10 |

1. If the price of output is $7, how many units of output would be produced?

In perfect competition a firm will continue to produce as long as its MR covers its MC. Since in perfect competition MR is P 🡺 the firm will produce all units for which P ≥ MC. The firm should thus produce 4 units.

1. What would total revenue be?

TR = P × Q = 7 × 4 = $28

1. What would total cost be?

TC = TFC + TVC at the level of output produced (4 units): 12 + 20 = $32

1. Would this firm operate or shut down in the short-run? What would the firm do in the long-run?

The firm is suffering a loss of $4 (TR – TC). In the short-run, the firm cannot exit the market. It should choose between shutting down and producing in order to minimize its loss.

Since TR exceeds TVC 🡺 the firm should stay in the market to minimize its loss:

* In fact, if the firm shuts down 🡺 it will incur a loss equal to its TFC ($12)
* If the firm continues to operate 🡺 it will suffer a loss of $4 [(TR – TVC) – TFC]
* Thus, by operating the firm will minimize its loss (from $12 to only $4)

In the long-run, since TR is below TC, the firm will exit the industry.

**II/ Multiple choice questions**

1. Here is some interesting information about Peter Pan’s Pizzeria: when it produces 10 pizzas, its total cost is $50; when it produces 20 units, its total cost is $76; and when it produces 30 units, its total cost is $114. Peter Pan’s Pizzeria is exhibiting            between 10 and 20 units of output and            between 20 and 30 units of output.

(**a**) economies of scale; constant returns to scale

(b) decreasing returns to scale; economies of scale

(c) constant returns to scale; constant returns to scale

(d) diseconomies of scale; diseconomies of scale

When Q is 10, the AC is $5 (50/10); when Q is 20, the AC is 3.8 (76/20); and when Q is 30, the AC is 3.8 (114/30). In the range (10 – 20), the AC decreases 🡺 the firm is experiencing economies of scale. In the range (20 – 30), the AC remains constant 🡺 the firm is experiencing constant returns to scale

Use the following diagram, which describes cost and revenue information for Tom and Jerry’s Mugs-producing firm, for the next 3 questions.



2. If the market price of mugs is $15.00, the firm can earn a            economic profit of            .

(**a**) positive; $50

(b) positive; $1,500

(c) negative; $50

(d) negative; $1,450

At a price of $15, the profit-maximizing level of production is 100 (where p = MC). The TR = $15 100 = $1,500. TC = $14.50 100 = $1,450. The profit is thus $50

3. If the market price of mugs is $14.22, the firm can earn an economic profit of            .

(**a**) zero

(b) –$90

(c) –$560

(d) –$540

At a price of $14.22, the profit-maximizing output level is 90. At this output level P = ATC = MC 🡺 TC = TR 🡺 economic profit = 0

4. At an output level of 70 mugs, total variable cost is            and total fixed cost is

(**a**) $490; $560

(b) $490; $1050

(c) $560; $490

(d) $560; $1050

TVC = AVC q 🡺 TVC = 7 × 70 = $490.

TFC = AFC × q and AFC = ATC – AVC = 15 – 7 = $8 🡺 TFC = 8 × 70 = $560.

In the following diagram, cost and revenue information is presented for Pastry Pie Bakery, a typical firm in the pastry industry. In the short run, Pastry Pie’s total fixed costs are $1,000. Use the diagram to answer the next 3 questions.



5. Diseconomies of scale set in after

(a) 600 units.

(**b**) 1,000 units.

(c) 1,200 units.

(d) 1,300 units.

Diseconomies make the *LRAC* curve slope upwards.

6. In long-run equilibrium, the equilibrium price will be            and the equilibrium output level will be            .

(a) $2; 1,300 units

(**b**) $2; 1,000 units

(c) $3; 1,200 units

(d) $4; 1,300 units

In long-run equilibrium, the equilibrium price is equal to the minimum of the LRAC; and equilibrium output level is that associated with the equilibrium price.

7. Suppose that Pastry Pie’s *SRAC* curve is *SRAC*2. Demand decreases and the market price falls to $1.50.

(a) In the short run, Pastry Pie should shut down.

(**b**) In the long run, the industry supply curve will shift left.

(c) In the long run, market demand will increase because the market price has fallen.

(d) In the long run, the industry supply curve will not change position.

At a price of $1.5 losses appear (the price is lower than $2 where economic profits are 0) 🡺 the industry supply curve will shift left because firms are leaving the industry.

Note: in the short-run, Pastry Pie will not shut down. In fact, at an output level of 1000 units, Pastry Pie’s TC = $2000 (SRAC × q). Since the firm’s fixed costs amount to $1000 (this is given) 🡺 the TVC = $1000 (TC – TFC). Pastry Pie’s TR is $1500 (the market price times the output level): it exceeds its TVC 🡺 the firm will minimize its loss by producing.

8. Pareto optimality is present in Popeye’s Land (where only Popeye, Olive and Bluto live) when:

(**a**) We cannot improve the welfare of Popeye and Olive without reducing the welfare of Bluto.

(b) The benefits from producing spinach are divided evenly.

(c) We can improve the welfare of Popeye and Olive without reducing the welfare of Bluto.

(d) The benefits from producing spinach are divided according to effort.

A Pareto-optimal situation is a situation where Pareto-optimal changes are exhausted (they are no longer possible): in such a situation, if we want to increase the welfare of a member of a society, we must reduce the welfare of at least one other member.

9. After the success of the TV ads and campaigns of “Zein’s products”, the Lebanese government has recently banned the latter from local TV appearances. This was done to:

(a) Control provision of a public good.

(**b**) Improve the imperfect information for buyers of these products.

(c) Impose externalities on potential competitors.

(d) Correct an imperfectly competitive market structure.

Given that Mr. Zein’s products are (highly) suspicious (and potentially harmful), the governmental decision was made to cancel-out the misinformation carried by these TV appearances and thus to improve the information available to the public.