**Solution (Assignment 10)**

**I/ Problems**

**Problem 1**

The following diagram shows the cost structure of a monopoly firm as well as the market demand. Identify on the graph and calculate the following:

1. Profit-maximizing output level
2. Profit-maximizing price
3. Total revenue
4. Total cost
5. Total profit (loss)

$

MC

ATC

5

4

2

MR

D

10000

Q

1. The profit-maximizing output level is 10000 (intersection of MR and MC)
2. The profit-maximizing price is $4
3. Total revenue is 4 × 10000 = $40000
4. Total cost is 5 × 10000 = $50000
5. Total loss is 40000 – 50000 = -$10000

**Problem 2**

The potato ships industry is run by a single firm, “Monopo Chips”. The following table shows the monthly demand for chips and total costs.

1. Complete the table.

MR = ∆TR/∆Q; MC = ∆TC/∆Q

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **Sales**  **(units)** | **Price**  **(per ships bag)** | **Total Cost** | ***MR*** |  | ***MC*** |
|  |  | 400 | $1.50 | $610 | - |  | - |
|  |  |  |  |  |  |  |  |
|  |  | 500 | $1.40 | $640 | 1 |  | 0.3 |
|  |  |  |  |  |  |  |  |
|  |  | 600 | $1.30 | $680 | 0.8 |  | 0.4 |
|  |  |  |  |  |  |  |  |
|  |  | 700 | $1.20 | $730 | 0.6 |  | 0.5 |
|  |  |  |  |  |  |  |  |
|  |  | 800 | $1.10 | $800 | 0.4 |  | 0.7 |
|  |  |  |  |  |  |  |  |
|  |  | 900 | $1.00 | $900 | 0.2 |  | 1 |
|  |  |  |  |  |  |  |  |
|  |  | 1000 | $0.90 | $1020 | 0 |  | 1.2 |
|  |  |  |  |  |  |  |  |

1. If Monopo Chips wants to maximize its profits, what is the price per bag (of the choices given here) that it would charge?

The firm will increase its output as long as MR ≥ MC. Based on the previous table, the optimal output level is 700 (for all the units produced MR exceeds MC; any output level above 700 will result in a MR below MC). If the firm produces 700 bags of chips, the unit price will be $1.2

(3) Consumers form a committee to regulate the chips industry. They want to set a price that maximizes consumers’ welfare and at the same time covers Monopo Chips’ total cost. What is the price (of the choices given) they should set (explain)?

We know that the output level that would maximize consumers’ welfare (i.e. consumers’ surplus) is that produced in a competitive industry. The competitive output is that where P = MC (this is the profit-maximizing output level of a firm operating in a competitive industry). Based on the table, the competitive output is 900 bags of chips and the price is $1

**II/ Multiple choice questions**

Use the following information to answer the next three questions. “La Poste”, a cloth manufacturer and a monopolist, has a constant marginal cost of $5. Fixed costs are $3.

Price Quantity Demanded

$10 0

$9 1

$8 2

$7 3

$6 4

$5 5

$4 6

$3 7

1. Given the demand schedule and cost information, La poste will maximize profits by setting a price of

(a) $8

(**b**) $7

(c) $6

(d) $5

A monopolist will maximize his profit by equating its MC and its MR. The MC is given, we thus need to compute the MR. To do so, we first need to compute the TR at every level of output:

|  |  |  |  |
| --- | --- | --- | --- |
| Price ($) | Q | TR ($) | MR ($) |
| 10 | 0 | 0 | - |
| 9 | 1 | 9 | 9 |
| 8 | 2 | 16 | 7 |
| 7 | 3 | 21 | 5 |
| 6 | 4 | 24 | 3 |
| 5 | 5 | 25 | 1 |
| 4 | 6 | 24 | -1 |
| 3 | 7 | 21 | -3 |

The monopolist will maximize its profit when he produces 3 units (at 3 units, the MR = MC). The correspondent price when Q = 3 is $7

2. At the profit-maximizing output level, La Poste’s profit will be

(a) $12.

(b) $10.

(**c**) $3.

(d) $6.

The firm’s profit is equal to the difference between its TR and its TC at the profit maximizing output level (3 units). When output is 3, TR = $21. TC is equal to FC + VC. FC are equal to $3. The VC is equal to the cost that is incurred with every unit of output produced, which is equal to the MC: the fist unit will cost $5, the second another $5, and the third $5 🡺 all in all, three units will cost $15 (in terms of VC) + the FC ($3). TC = $18 🡺 profit = 21 – 18 = $3

3. Currently, La Poste is producing at the output level where price equals marginal cost.  
Which of the following strategies will increase La Poste’s profit?

(a) Maintain price and output—La Poste is already maximizing profit.

(**b**) Increase price and decrease output.

(c) Decrease price and increase output.

(d) Decrease price and decrease output.

If La Poste is producing at the output level where P = MC 🡺 it is producing 5 units of output. This level of production is above the profit-maximizing level (3 units) 🡺 La Poste should therefore reduce its production level. To do so, it needs to increase its price.