# KIA Fresh Graduates Program - Economics
# Problem Set 2

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1. The demand schedule in a perfectly competitive market is given by $P = 120 - 2Q$ (for $Q \leq 60$) and the long-run cost structure of each company is:

$$\begin{aligned} \text{Total cost:} &\quad 300 + 3Q + 5Q^2 \\ \text{Average cost:} &\quad \frac{300}{Q} + 3 + 5Q \\ \text{Marginal cost:} &\quad 3 + 10Q \end{aligned}$$

New companies will enter the market at any price greater than:

A. 9.

B. 73.

C. 85.

2. A firm operates in a monopolistically competitive market where its total cost (TC) and demand functions are given by:

$$TC = 100 + 10Q + 2Q^2$$

$$P = 80 - 1.5Q$$

What is the profit-maximizing output and price, and the economic profit at this output level?

A. $Q = 10, P = 65, \text{Economic Profit} = 250$

B. $Q = 15, P = 50, \text{Economic Profit} = 225$

C. $Q = 20, P = 35, \text{Economic Profit} = 200$

3. SigmaSoft and ThetaTech are the dominant makers of computer system software. The market has two components: a large mass-market component in which demand is price sensitive, and a smaller performance-oriented component in which demand is much less price sensitive. SigmaSoft's product is considered to be technically superior. Each company can choose one of two strategies:

- Open architecture (Open): Mass market focus allowing other software vendors to develop products for its platform.
- Proprietary (Prop): Allow only its own software applications to run on its platform.

Depending upon the strategy each company selects, their profits would be:

| | ThetaTech – Open | ThetaTech – Prop |
|---|---|---|
| SigmaSoft – Open | $(400, 600)$ | $(800, 300)$ |
| SigmaSoft – Prop | $(650, 700)$ | $(600, 400)$ |

The Nash equilibrium for these companies is:

A. proprietary for SigmaSoft and proprietary for ThetaTech.

B. open architecture for SigmaSoft and proprietary for ThetaTech.

C. proprietary for SigmaSoft and open architecture for ThetaTech.

4. Upsilon Natural Gas, Inc. is a monopoly enjoying very high barriers to entry. Its marginal cost is $40 and its average cost is $70. A recent market study has determined the price elasticity of demand is 1.5. The company will most likely set its price at:

A. $40.

B. $70.

C. $120.

5. An analyst gathers the following market share data for an industry:

| Company | Sales (in millions of €) |
|---|---|
| ABC | 300 |
| Brown | 250 |
| Coral | 200 |
| Delta | 150 |
| Erie | 100 |
| All others | 50 |

The industry's four-company concentration ratio is closest to:

A. 71%.

B. 86%.

C. 95%.

6. An analyst gathered the following market share data for an industry comprised of five companies:

| Company | Market Share (%) |
|---|---|
| Zeta | 35 |
| Yusef | 25 |
| Xenon | 20 |
| Waters | 10 |
| Vlastos | 10 |

The industry's three-firm Herfindahl–Hirschmann Index is closest to:

A. 0.185.

B. 0.225.

C. 0.235.