Homework 5 – KEY

Average: 79.87 + 0pts GI bonus

Due on 18/2/2025, by 23:00

The tasks in this assignment were designed for the average student to solve independently after mastering the material. The answers provided here are written in an instructional manner to help you understand the problem-solving process for each task. If you continue to struggle with a task after reviewing this key, the difficulty may stem not from the task itself, but from having missed or overlooked some parts of the required material.

1. Which of the following is most likely to be true for monopolistically competitive markets? [9p]
   - A. Both S-R and L-R profit can be positive.
   - B. Both S-R and L-R profit is zero.
   - **92%C. S-R profit can be positive, but L-R profit is zero.**
   - D. S-R profit is zero, but L-R profit can be positive.

   [Profit can be non-zero in the S-R but entry will eliminate it in the L-R]

2. The air-conditioner industry most likely belongs to which of the following market structures? [9p]
   - A. Perfect competition.
   - **9%B. Monopolistic competition.**
   - 91%C. Oligopoly.
   - D. Monopoly.

   [There are many firms operating in the market, so that they cannot interact with each other, entry and exit is relatively easy for them, and products are highly substitutable, but certainly, customers can find differences between them]

3. Which of the following market structures brings about zero DWL, given the same demand and cost curves? [9p]
   - 13%A. Perfect competition. *[PC is a totally efficient market structure, every resource is distributed, so the DWL is zero]*
   - B. Bertrand oligopoly. *[In Bertrand oligopoly, firms both offer the same quantity and charge the same price, as in a PC market]*
   - **85%C. Both A and B.**
   - D. None of the above.

4. Which of the following is most likely to be true in a kinked-demand industry? [9p]
   - **90%A. If a firm drops its price, other rivals may begin price war.**
   - B. If a firm increases its price, other rivals may begin price war.
   - C. Both A and B.
   - D. None of the above.

   [Competitors may feel threatened by price reduction and overreact, but not from price raises]

5. Which of the following is a characteristic of monopolistic competition? [8p]
   - A. Barriers to entry. *[Mon. Comp. is associated with free entry and exit]*
   - 24%B. A unique product. *[Mon. Comp. is associated with slightly differentiated product]*
   - C. Small number of firms. *[Mon. Comp. is associated with a large number of firms]*
   - **71%D. DWL.** *[Mon. Comp. results to a small DWL]*

Scenario 5.1: *Firm 1 and firm 2 share a market with demand* $p = 1,600 - 5Q$, *where* Q *denotes the total quantity sold in the market. Each firm's cost is* $FC = \$2,000$ *and* $MC = 100$.

6. According to scenario 5.1, how much would <u>each</u> firm produce, if the firms competed in quantities? [8p]

    A. Around 25 units.

    B. Around 50 units.

    C. Around 75 units.

    84%D. Around 100 units.

    E. Around 125 units.

    F. Around 150 units.

[We can solve this for the first firm as: $MR_1 = MC$ *or* $1,600 - 5q_2 - 10q_1 = 100$ *or* $10q_1 = 1,500 - 5q_2$ *or* $q_1 = 150 - 0.5q_2$, *which is the optimal reaction function for firm 1. Since we know that at equilibrium* $q_1 = q_2$, *we can write* $q_1 = 150 - 0.5q_1$ *or* $q_1 = 100$, *which implies that* $q_2 = 100$, *as well]*

7. According to scenario 5.1, what will the profit for <u>each</u> firm be, if the firms competed in quantities? [8p]

    A. Around \$10,000.

    B. Around \$20,000.

    C. Around \$30,000.

    D. Around \$40,000.

    86%E. Around \$50,000.

    F. Around \$60,000.

[Price will be given by the demand curve: $p = 1,600 - 5 \cdot (100 + 100) = \$600$. *In addition, since MC is constant, every next unit costs the same and therefore AVC should be also constant and equal to the MC. So, the profit for each firm can be calculated as* $(p - AVC) \cdot q - FC = (600 - 100) \cdot 100 - 2,000 = \$48,000]$

8. According to scenario 5.1, how much would <u>each</u> firm produce, if the two firms colluded? [8p]

    A. Around 25 units.

    B. Around 50 units.

    92%C. Around 75 units.

    D. Around 100 units.

    E. Around 125 units.

    F. Around 150 units.

[The $MR = 1,600 - 10Q$, *must be equal to the MC. That is,* $1,600 - 10Q = 100$ *or* $Q = 150$. *So, each firm would produce* $q = {Q}/{2} = 75$ *units]*

9. According to scenario 5.1, what would profit be for <u>each</u> firm, if the two firms colluded? [8p]

    A. Around \$15,000.

    B. Around \$25,000.

    C. Around \$35,000.

    D. Around \$45,000.

    91%E. Around \$55,000.

    F. Around \$65,000.

[Price will be calculated by the demand curve: $p = 1,600 - 5 \cdot 150$ *or* $p = \$850$. *The profit can be calculated as* $(p - AVC) \cdot q - FC = (850 - 100) \cdot 75 - 2,000 = \$54,250]$

10. ✓ The two firms in scenario 5.1 collude but firm 1 alone decides to cheat. How much will firm 1 produce? [8p]

    A. Around 50 units.

    B. Around 70 units.

    C. Around 90 units.

86% **D. Around 110 units.**

    E. Around 130 units.

    F. Around 150 units.

[Firm 1 will assume that $q_2 = 75$ and will plug this into its reaction function: $q_1 = 150 - 0.5q_2$ or $q_1 = 150 - 0.5 \cdot 75$ or $q_1 = 112.5$]

11. ✓ The two firms in scenario 5.1 collude but firm 1 alone decides to cheat. How much will the profit for firm 1 be given that firm 2 indeed does not cheat? [8p]

    A. Around $10,000.

    B. Around $20,000.

    C. Around $30,000.

    D. Around $40,000.

    E. Around $50,000.

32% **F. Around $60,000.**

[Price will again be given by the demand curve: $p = 1,600 - 5 \cdot (112.5 + 75) = \$662.5$. Profit for firm 1 will be $(p - AVC) \cdot q - FC = (662.5 - 100) \cdot 112.5 - 2,000 = \$61,281.25$]

12. ✓ The two firms in scenario 5.1 collude but firm 1 alone decides to cheat. How much will the profit for firm 2 be given that it indeed does not cheat? [8p]

    A. Around $10,000.

    B. Around $20,000.

    C. Around $30,000.

84% **D. Around $40,000.**

    E. Around $50,000.

    F. Around $60,000.

[Profit for firm 2 is $(p - AVC) \cdot q - FC = (662.5 - 100) \cdot 75 - 2,000 = \$40,187.50$]