Chapter 16
Oligopoly

16.1 What Is Oligopoly?

1) A firm faces a small number of competitors. This firm is competing in
   A) a monopoly.
   B) monopolistic competition.
   C) an oligopoly.
   D) perfect competition.
   E) a perfect multi-firm monopoly.
   Answer: C
   Topic: Oligopoly
   Skill: Level 1: Definition
   Objective: Checkpoint 16.1
   Author: MR

2) Firms in an oligopoly
   i. are independent of each others’ actions.
   ii. can each influence the market price.
   iii. charge a price equal to marginal revenue.
      A) i only.
      B) ii only.
      C) iii only.
      D) i and iii.
      E) i, ii, and iii.
      Answer: B
      Topic: Oligopoly
      Skill: Level 1: Definition
      Objective: Checkpoint 16.1
      Author: SA
3) How is a firm in an oligopoly similar to a monopoly?
   A) Both types of firms produce a standardized product.
   B) The behavior of both types of firms can be analyzed using game theory.
   C) Both types of firms operate behind natural or legal barriers to entry.
   D) Both types of firms are price takers.
   E) Both types of firms must make a decision whether or not to collude to push their price higher.

Answer: C

Topic: Oligopoly
Skill: Level 2: Using definitions
Objective: Checkpoint 16.1
Author: PH

4) A cartel is most likely to occur in
   A) perfect competition as firms compete by reducing cost.
   B) oligopoly as firms act together to raise prices and increase profits.
   C) monopolistic competition where firms collude to increase profits.
   D) oligopoly as firms compete to lower price and increase their own profits.
   E) monopoly because it faces no competition.

Answer: B

Topic: Cartel
Skill: Level 2: Using definitions
Objective: Checkpoint 16.1
Author: WM

5) A group of firms acting together to limit output, raise price, and increase economic profit is called a
   A) duopoly.
   B) monopolistic oligopoly.
   C) competitive oligopoly.
   D) cartel.
   E) multi-firm competitive monopoly.

Answer: D

Topic: Cartel
Skill: Level 1: Definition
Objective: Checkpoint 16.1
Author: JC
6) A group of firms that has entered into an agreement to restrict output and increase prices and profits is called
   A) a compliance.
   B) a cartel.
   C) an oligopoly.
   D) a duopoly.
   E) a multi-firm monopoly.
   Answer: B
   Topic: Cartel
   Skill: Level 1: Definition
   Objective: Checkpoint 16.1
   Author: MR

7) If a few oil-producing countries in the Middle East decide to jointly limit the production of oil,
   A) they are forming a cartel.
   B) they would like the price of oil to be the same as if the market were perfectly competitive.
   C) game theory does not apply to their actions because they are nations, not firms.
   D) they will try to operate as a large, monopolistically competitive firm.
   E) they will agree to lower the price of oil in order to increase their profits.
   Answer: A
   Topic: Cartel
   Skill: Level 2: Using definitions
   Objective: Checkpoint 16.1
   Author: SA

8) "Duopoly" is
   A) another name for monopoly.
   B) a special type of monopolistic competition.
   C) a two–firm oligopoly.
   D) a game with three players.
   E) the situation when a firm sets a duo (two) of different prices for its customers.
   Answer: C
   Topic: Duopoly
   Skill: Level 1: Definition
   Objective: Checkpoint 16.1
   Author: WM
9) A market with two firms competing
   
   A) is known as a duopoly.
   B) is monopolistic competition if the firms produce differentiated products.
   C) cannot have a Herfindahl-Hirschman Index because there are less than 50 firms in the market.
   D) is called a “dual monopoly.”
   E) is perfect competition if the firms produce an identical product.

Answer: A

Topic: Duopoly
Skill: Level 1: Definition
Objective: Checkpoint 16.1
Author: SA
10) The figure above shows the market demand curve and the ATC curve for a firm. If all firms in the market have the same ATC curve, the efficient scale for one firm is ____ units per hour.

A) 2,000
B) 4,000
C) 8,000
D) 10,000
E) more than 10,000

Answer: A

Topic: Natural oligopoly
Skill: Level 3: Using models
Objective: Checkpoint 16.1
Author: CD
11) The figure above shows the market demand curve and the ATC curve for a firm. If all firms in the market have the same ATC curve, the lowest price at which a firm could stay in business in the long run is ____ per unit and the quantity demanded in the market at that price is ____ units per hour.

A) $20; 4,000
B) $10; 8,000
C) $10; 4,000
D) $20; 2,000
E) $20; 8,000

Answer: B

12) The figure above shows the market demand curve and the ATC curve for a firm. If all firms in the market have the same ATC curve, the figure shows a ____ can profitably operate.

A) natural monopoly in which 1 firm
B) natural oligopoly in which 2 firms
C) natural oligopoly in which 3 firms
D) natural oligopoly in which 4 firms
E) natural oligopoly in which 5 more firms

Answer: D

13) The figure above shows the market demand curve and the ATC curve for a firm. If all firms in the market have the same ATC curve, economies of scale limit the market to ____ firm(s).

A) 1
B) 2
C) 3
D) 4
E) 8

Answer: D
16.2 Alternative Oligopoly Outcomes

1) When firms in an oligopoly successfully collude and do not cheat on a cartel agreement, they achieve long-run economic profit similar to
   A) perfect competition.
   B) monopoly.
   C) monopolistic competition.
   D) non-colluding oligopolies.
   E) the firms in regulated industries.

Answer: B

Topic: Monopoly outcome
Skill: Level 2: Using definitions
Objective: Checkpoint 16.2
Author: PH

2) The range in which a duopoly’s output falls is less than or equal to the output level in ____ and more than or equal to the output level in ____.
   A) monopolistic competition; monopoly
   B) monopolistic competition; perfect competition
   C) perfect competition; monopoly
   D) monopoly; monopolistic competition
   E) monopoly; perfect competition

Answer: C

Topic: Range of outcomes
Skill: Level 2: Using definitions
Objective: Checkpoint 16.2
Author: SA

3) The possible alternatives for an oligopoly range from the monopoly case with ____ to the perfectly competitive case with ____.
   A) high output; low output
   B) low prices; high prices
   C) low profits; high profits
   D) low output; high output
   E) no cooperation among the firms; much cooperation among the firms

Answer: D

Topic: Range of outcomes
Skill: Level 2: Using definitions
Objective: Checkpoint 16.2
Author: WM
4) Which of the following statements is correct?
   A) A firm in oligopoly will charge a price that is lower than the price charged in perfect competition.
   B) If firms in oligopoly look only at their own self-interest in deciding the output they should produce, the total market output will exceed that of a monopoly.
   C) If one oligopolist reduces the price of its product, its demand curve shifts leftward.
   D) Because many producers join to form a cartel, the market becomes monopolistic competition.
   E) It is in the self-interest of each firm in an oligopoly to take the actions that maximize all the firms' joint profit.
   
   Answer: B
   
   Topic: Duopolist's dilemma
   Skill: Level 2: Using definitions
   Objective: Checkpoint 16.2
   Author: SA

5) The major dilemma facing Boeing and Airbus is the
   A) fact that neither will respond to the behavior of the other.
   B) certainty surrounding the reaction of each firm to the behavior of the other firm.
   C) fact that if each firm separately tries to maximize its profit, it might wind up with less profit that otherwise.
   D) competition from other firms that drives their economic profit to zero.
   E) fact that when they collude to maximize their profit, the other firm's profit might be larger than its profit.
   
   Answer: C
   
   Topic: Duopolist's dilemma
   Skill: Level 2: Using definitions
   Objective: Checkpoint 16.2
   Author: JC
6) Which of the following is true? In the above figure, if the market is
A) a monopoly, output will be \( Q_1 \) and price will be \( P_3 \).
B) a monopoly, output will be \( Q_3 \) and price will be \( P_3 \).
C) perfect competition, output will be \( Q_2 \) and price will be \( P_2 \).
D) perfect competition, output will be \( Q_1 \) and price will be \( P_1 \).
E) perfect competition, output will be \( Q_3 \) and price will be \( P_3 \).

Answer: C

Topic: Competitive outcome
Skill: Level 3: Using models
Objective: Checkpoint 16.2
Author: SA
7) In the above figure, the output of an oligopoly will range between
   A) 0 and Q1.
   B) Q1 and Q2.
   C) Q1 and Q3.
   D) Q2 and Q3.
   E) 0 and Q2.

   Answer: B
   Topic: Range of outcomes
   Skill: Level 3: Using models
   Objective: Checkpoint 16.2
   Author: SA

8) Boeing and Airbus have entered into a cartel agreement that will enable them to boost their profits. What occurs if Boeing decides to cheat on the agreement?
   i. Boeing lowers the price of its airplanes.
   ii. The total industry output increases.
   iii. The total profits in the airplane industry will decrease.

   A) i only.
   B) ii only.
   C) iii only.
   D) i and ii.
   E) i, ii, and iii.

   Answer: E
   Topic: Range of outcomes
   Skill: Level 3: Using models
   Objective: Checkpoint 16.2
   Author: MR
16.3 Game Theory

1) Game theory is the tool that economists use to analyze strategic behavior, which is behavior that takes into account the ____ behavior of others and the mutual recognition of ____.
   A) unexpected; interdependence
   B) unexpected; independence
   C) expected; interdependence
   D) expected; independence
   E) random; profit
Answer: C

Topic: Game theory
Skill: Level 1: Definition
Objective: Checkpoint 16.3
Author: JC

2) Game theory is used to analyze the interactions among firms in ____.
   A) oligopoly.
   B) perfect competition.
   C) monopoly.
   D) monopolistic competition.
   E) Both answers A and D are correct.
Answer: A

Topic: Game theory
Skill: Level 1: Definition
Objective: Checkpoint 16.3
Author: CD

3) Economists use game theory to analyze strategic behavior, which takes into account
   A) monopoly situations.
   B) the expected behavior of others and the recognition of mutual interdependence.
   C) the price-taking behavior of oligopolists.
   D) non-price competition.
   E) that increased demand decreases the market power of the firms in the market.
Answer: B

Topic: Game theory
Skill: Level 1: Definition
Objective: Checkpoint 16.3
Author: PH
4) A tool that allows economists to analyze the strategic behavior of firms is
   A) game theory.
   B) the four-firm concentration ratio.
   C) the Herfindahl-Hirschman Index.
   D) the monopolistic duopolist.
   E) the concentration of power ratio.
   Answer: A
   
   Topic: Game theory
   Skill: Level 1: Definition
   Objective: Checkpoint 16.3
   Author: SA

5) The concepts of mutual interdependence and game theory illustrate the fact that firms competing in oligopoly
   A) consider the actions of the rivals before changing the price of their product.
   B) ignore the actions of their rivals when considering price changes.
   C) engage in frequent price changes.
   D) never change prices.
   E) will mutually determine the combined best outcome for all players.
   Answer: A
   
   Topic: Game theory
   Skill: Level 2: Using definitions
   Objective: Checkpoint 16.3
   Author: PH

6) All games have which features?
   A) prices, rules, and payoffs
   B) rules, markets, and prices
   C) rules, strategies, and payoffs
   D) rules, strategies, and costs
   E) equilibrium, prices, and quantities
   Answer: C
   
   Topic: Game theory
   Skill: Level 1: Definition
   Objective: Checkpoint 16.3
   Author: JC
7) A Nash equilibrium
   i. is named after the Nobel prize winning economist, John Nash.
   ii. occurs when each player chooses the best strategy given the strategy of the other player.
   iii. must give the best possible outcome for each player.
      A) i only.
      B) ii only.
      C) iii only.
      D) i and ii.
      E) ii and iii.
   Answer: D

8) A Nash equilibrium occurs when each player in a game takes the ____ given the action of the other player.
   A) worst possible action for himself or herself
   B) best possible action for himself or herself
   C) most unpredictable possible action
   D) most mutually beneficial possible action
   E) best possible action for the other player
   Answer: B
9) A Nash equilibrium in the duopoly game
   A) means that one player has greater market power.
   B) occurs when each player takes the best possible action regardless of the strategy chosen by other firms.
   C) will always lead to equilibrium in which the firms’ total profit is the largest.
   D) can occur only if firms cooperate with each other.
   E) means that a firm must be able to determine its actions and the actions of its competitor.

Answer: B
Topic: Nash equilibrium
Skill: Level 2: Using definitions
Objective: Checkpoint 16.3
Author: SA

10) The prisoners’ dilemma is
    A) an example of a duopoly game.
    B) a theory about why firms break the law.
    C) competition that can occur among firms in monopolistic competition.
    D) an example of the monopolist charging high prices.
    E) an example of a game that does not have a Nash equilibrium.

Answer: A
Topic: Prisoners’ dilemma
Skill: Level 1: Definition
Objective: Checkpoint 16.3
Author: WM

11) The prisoners’ dilemma is an example of
    A) a cartel.
    B) a game played only once.
    C) an oligopoly.
    D) a repeated game.
    E) equilibrium in monopolistic competition.

Answer: B
Topic: Prisoners’ dilemma
Skill: Level 1: Definition
Objective: Checkpoint 16.3
Author: CD
12) In a prisoners' dilemma game, in the Nash equilibrium
   A) neither player gets his or her best outcome.
   B) both players get their best outcome.
   C) one player gets his or her best outcome and the other player does not.
   D) collusion would not alter the outcome.
   E) Either answer A or B might be correct depending on whether the players
       communicate with each other or do not communicate with each other.

   Answer: A
   Topic: Prisoners’ dilemma
   Skill: Level 2: Using definitions
   Objective: Checkpoint 16.3
   Author: MR

13) The prisoners' dilemma is similar to the problem faced by firms in an oligopoly in the
    United States because
    A) mutual interdependence exists, and collusion is illegal in the United States, so the firms
       cannot legally communicate.
    B) collusion is legal in the United States, and firms can communicate their pricing
       decisions to each other.
    C) failure to cooperate leads to better outcomes than cooperation.
    D) private prisons are run by oligopolies.
    E) the firms can communicate but mutual interdependence exists.

   Answer: A
   Topic: Prisoners’ dilemma
   Skill: Level 2: Using definitions
   Objective: Checkpoint 16.3
   Author: PH
14) Suppose MCI and AT&T can each charge either 3¢ or 4¢ a minute for a long distance call. The above table illustrates the payoffs, in millions of dollars, from each of the four possible outcomes that could occur in their duopoly setting. If MCI charges 4¢ a minute and AT&T charges 4¢ a minute, then MCI’s profit will be ____ million and AT&T’s profit will be ____ million.

A) $320; $320
B) $200; $500
C) $500; $200
D) $450; $450
E) $320; $500

Answer: A

Topic: Payoff matrix
Skill: Level 2: Using definitions
Objective: Checkpoint 16.3
Author: JC
15) Suppose MCI and AT&T can each charge either 3¢ or 4¢ a minute for a long distance call. The above table illustrates the payoffs, in millions of dollars, from each of the four possible outcomes that could occur in their duopoly setting. What must MCI's price be for AT&T to earn $500 million in profit?

A) 4¢ a minute
B) 3¢ a minute
C) 0¢ a minute
D) either 4¢ or 3¢ a minute because AT&T earns $500 million in profit either way
E) None of the above answers is correct because the payoff matrix shows that it is not possible for AT&T to earn $500 million in profit

Answer: A

Topic: Payoff matrix
Skill: Level 2: Using definitions
Objective: Checkpoint 16.3
Author: JC

16) Suppose MCI and AT&T can each charge either 3¢ or 4¢ a minute for a long distance call. The above table illustrates the payoffs, in millions of dollars, from each of the four possible outcomes that could occur in their duopoly setting. If MCI charges 3¢ a minute and AT&T charges 4¢ a minute, then MCI's profit will be ____ million and AT&T's profit will be ____ million.

A) $320; $320
B) $200; $500
C) $500; $200
D) $450; $450
E) $320; $450

Answer: C

Topic: Payoff matrix
Skill: Level 2: Using definitions
Objective: Checkpoint 16.3
Author: JC
17) Long-run economic profits are most likely to be earned in
   A) perfect competition and oligopoly.
   B) perfect competition and monopoly.
   C) monopoly and oligopoly.
   D) oligopoly and monopolistic competition.
   E) perfect competition and monopolistic competition.

Answer: C

Topic: Duopoly game
Skill: Level 2: Using definitions
Objective: Checkpoint 16.3
Author: PH

18) If two duopolists can stick to a cartel agreement to boost their prices, then both
   A) earn greater profits than if they did not collude.
   B) price at marginal cost.
   C) price below average total cost.
   D) decrease their economic profits.
   E) increase their production so that each produces more than if they did not collude.

Answer: A

Topic: Duopoly game
Skill: Level 2: Using definitions
Objective: Checkpoint 16.3
Author: MR
19) The only two firms in a market are trying to decide what price to charge. The payoff matrix for this duopoly game is shown above. The payoffs are thousands of dollars of economic profit. In the Nash equilibrium, Firm A will set a price of ____ and Firm B will set a price of ____.

A) $10; $20  
B) $20; $10  
C) $10; $10  
D) $20; $20  
E) $20; something, but more information is needed to determine Firm B's price

Answer: C

Topic: Nash equilibrium
Skill: Level 4: Applying models
Objective: Checkpoint 16.3
Author: SA
20) The only two firms in a market are trying to decide what price to charge. The payoff matrix for this duopoly game is shown above. The payoffs are thousands of dollars of economic profit. In the above game, in the Nash equilibrium,

A) Firm A and Firm B are both making $40,000 in economic profit.
B) Firm A and Firm B are both making $55,000 in economic profit.
C) Firm A is making $60,000 and Firm B is making $55,000 in economic profit.
D) Firm A and Firm B are both making $60,000 in economic profit.
E) Firm A and Firm B are both making $35,000 in economic profit.

Answer: A

Topic: Nash equilibrium
Skill: Level 4: Applying models
Objective: Checkpoint 16.3
Author: SA

21) The only two firms in a market are trying to decide what price to charge. The payoff matrix for this duopoly game is shown above. The payoffs are thousands of dollars of economic profit. Which of the following statements is correct?

A) If the firms play this game repeatedly, one would end up charging $20 and the other $10.
B) If the firms cooperate, they could both earn $55,000 in economic profit.
C) The Nash equilibrium in this game is for both firms to set \( P = 20 \) because that maximizes their combined profit.
D) Firm B's strategy is to always set \( P = 20 \) because that gives Firm B the highest possible profit.
E) If Firm B sets \( P = 20 \), then Firm A will maximize its profit by setting its \( P = 20 \).

Answer: B

Topic: Repeated games
Skill: Level 4: Applying models
Objective: Checkpoint 16.3
Author: SA
16.4 Integrative Questions

1) If the HHI for an industry equals 3,200,
   A) firms in the industry must enter a cartel in order to earn an economic profit.
   B) firms in the industry are most likely to earn zero economic profit.
   C) the industry is probably an oligopoly.
   D) firms in the industry are likely to act independently of each other.
   E) the industry is almost surely monopolistic competition.

   Answer: C
   Topic: Integrative
   Skill: Level 2: Using definitions
   Objective: Integrative
   Author: CD

2) Which of the following are characteristics of an oligopoly?
   i) The HHI for an oligopoly is between 100 and 1800.
   ii) There are a few firms that compete.
   iii) The firms can increase their profit by forming a cartel.

   A) i and ii
   B) i and iii
   C) ii and iii
   D) i, ii, and iii
   E) i only.

   Answer: C
   Topic: Integrative
   Skill: Level 2: Using definitions
   Objective: Integrative
   Author: CD
3) The figure above shows the market demand curve and the ATC curve for a firm. If all firms in the market have the same ATC curve, then ____ limit the market to 3 firms.

A) economies of scale
B) a "tit for tat" strategy
C) collusion
D) a Nash equilibrium
E) legal requirements

Answer: A

*Topic: Integrative*

*Skill: Level 3: Using models*

*Objective: Integrative*

*Author: CD*
4) The figure above shows the market demand curve and the ATC curve for a firm. Each firm in the market has the same ATC curve. If the firms in the industry agree to form a cartel, the firms in the industry earn an economic profit if there are ____ firms, each producing ____ units per hour.
   A) 3; 4,000
   B) 4; 3,000
   C) 2; 6,000
   D) 2; 4,000
   E) 2; 12,000
   Answer: D
   Topic: Integrative
   Skill: Level 3: Using models
   Objective: Integrative
   Author: CD

5) If a legal oligopoly exists,
   A) the firms always engage in a "tit for tat" strategy.
   B) there is the possibility that the market is large enough for more firms.
   C) the firms never collude.
   D) monopoly profits cannot be earned.
   E) the firms may legally merge and become a monopoly.
   Answer: B
   Topic: Integrative
   Skill: Level 3: Using models
   Objective: Integrative
   Author: CD

6) Firms operating in an oligopoly
   A) always compete on price.
   B) always compete on price, product quality and marketing.
   C) can earn monopoly profits but there is no assurance that they will do so.
   D) usually achieve the competitive outcome.
   E) always earn monopoly profits.
   Answer: C
   Topic: Integrative
   Skill: Level 3: Using models
   Objective: Integrative
   Author: CD
7) The range of output for a duopoly ranges between the
   A) perfectly competitive outcome and the monopolistically competitive outcome.
   B) efficient scale and the perfectly competitive outcome.
   C) minimum of ATC and the efficient scale.
   D) monopoly outcome and the perfectly competitive outcome.
   E) short-run perfectly competitive outcome and the long-run perfectly competitive outcome.

   Answer: D

   Topic: Integrative
   Skill: Level 3: Using models
   Objective: Integrative
   Author: CD

8) What is the conclusion in the prisoners' dilemma?
   A) Firms should not enter a legal duopoly.
   B) Two prisoners acting in their own best interest harm their joint interest.
   C) There is no Nash equilibrium available to the prisoners.
   D) Prisoners do not act interdependently.
   E) Duopolies almost always reach their best outcome.

   Answer: B

   Topic: Integrative
   Skill: Level 3: Using models
   Objective: Integrative
   Author: CD

9) Which of the following can be games played by firms in an oligopoly?
   i. choosing how much to spend on advertising
   ii. choosing how much to spend on R&D
   iii. choosing to enter a legal duopoly

   A) i and ii
   B) i and iii
   C) ii and iii
   D) ii only
   E) iii only.

   Answer: A

   Topic: Integrative
   Skill: Level 2: Using definitions
   Objective: Integrative
   Author: CD