

Econ8500_Imperfect_Competition**Multiple Choice**

Identify the choice that best completes the statement or answers the question.

- _____ 1. In the quasi-competitive model
- firms believe that price increases result in a very elastic demand, while price decreases result in an inelastic demand for their product.
 - each firm acts as a price taker even when there are few firms in an industry.
 - one dominant firm takes the reactions of all other firms into account in its output and pricing decisions.
 - firms coordinate their decisions to act as a multiplant monopoly.
- _____ 2. In the long run, under the quasi-competitive model, for a typical firm, price is
- above average cost but equal to marginal cost.
 - above marginal cost but equal to average cost.
 - above marginal cost.
 - equal to marginal cost and equal to or greater than average cost.
- _____ 3. In the cartel model
- firms believe that price increases result in a very elastic demand, while price decreases result in an inelastic demand for their products.
 - each firm acts as a price taker.
 - one dominant firm takes the reactions of all other firms into account in its output and pricing decisions.
 - firms coordinate their decisions to act as a multiplant monopoly.
- _____ 4. Under the cartel model, each firm produces where
- marginal cost equals marginal revenue.
 - price equals marginal cost.
 - the average cost is minimized.
 - price exceeds marginal cost by the greatest amount.
- _____ 5. All of the following are problems associated with maintaining a cartel except
- cartels are illegal.
 - a large amount of information is needed to coordinate a cartel.
 - profits are not maximized by a cartel so it will evolve into a monopoly.
 - each member of the cartel has an incentive to “chisel” by expanding output.
- _____ 6. Each firm in a cartel has an incentive to chisel because market price exceeds
- marginal cost.
 - average cost.
 - average variable cost.
 - average fixed cost.
- _____ 7. In the price leadership model,
- firms believe that price increases result in a very elastic demand, while price decreases result in an inelastic demand for their product.
 - each firm acts as a price taker.
 - one dominant firm takes the reactions of all other firms into account in its output and pricing decisions.
 - firms coordinate their decisions to act as multiplant monopolies.

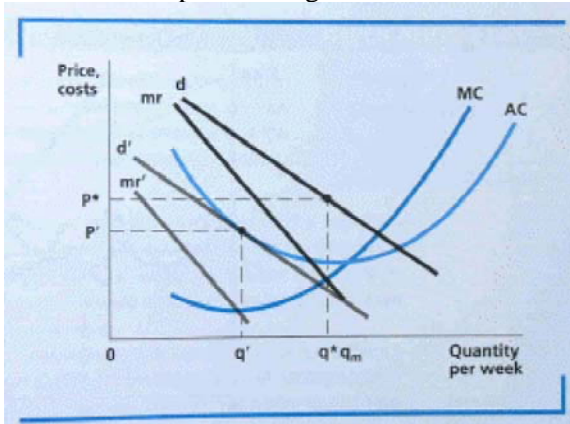
- _____ 8. Under the price leadership model,
- most firms act independently of the leader.
 - the leader's price is always lower than the other firms' prices.
 - the leader's price is always higher than the other firms' prices.
 - all firms adjust their prices to the price chosen by the leader.
- _____ 9. In the Cournot model, each firm assumes that its rival will _____ its output when the firm adjusts its own output. Which word best completes the sentence?
- increase.
 - not change.
 - decrease.
 - None of the above
- _____ 10. In a Cournot equilibrium each firm chooses an output level that
- maximizes joint profits.
 - maximizes the price received.
 - maximizes profits given what the other firm produces.
 - maximizes revenues given what the other firm produces.
- _____ 11. Product differentiation complicates the study of oligopolies because such markets may not
- be efficient.
 - have prices equal to marginal cost.
 - have free entry and exit.
 - obey the law of one price.
- _____ 12. A profit maximizing firm should spend an additional dollar on advertising so long as this expenditure results in
- at least one dollar of additional revenues.
 - more than one dollar of reduced costs.
 - increased profits.
 - more than one dollar of additional demand.
- _____ 13. In a contestable market, firms produce where
- price equals marginal cost and long-run average cost.
 - price equals marginal cost and is above long-run average cost.
 - marginal cost equals marginal revenue and long-run average cost.
 - marginal cost equals marginal revenue below long-run average cost.
- _____ 14. In a contestable market,
- barriers to entry must exist.
 - economic profits are positive.
 - entry and exit are costless.
 - all firms are price takers.
- _____ 15. The concentration ratio measures
- the number of firms in a market.
 - the percent of total employees in a market hired by the largest firm.
 - the percent of total output in a market produced by the largest firms.
 - the alcoholic content of a drink.
- _____ 16. Assume the elasticity of demand is $e = -3$. The price under a cartel solution will be _____ times higher than the quasi-competitive price.
- 3
 - 2.
 - 1.5.
 - 6.

- _____ 17. Consider a monopoly model where Q is the output and P is the price. The market demand function is $Q = 100 - 0.5P$. The marginal cost is constant and equal to 40. Profits are maximized at the point where Q is equal to:
- 20.
 - 40.
 - 60.
 - 80.
- _____ 18. Consider a Cournot duopoly model where Q is the market output, P is the price, and q_A and q_B are the output levels produced by firms A and B, respectively. The market demand function is $Q = 100 - 0.5P$. The marginal cost is constant and equal to 40. Firm A's reaction function is:
- $q_A = \frac{80 - q_B}{2}$
 - $q_A = \frac{100 - q_B}{2}$
 - $q_A = \frac{60 - q_B}{2}$
 - $q_A = \frac{200 - q_B}{2}$
- _____ 19. Consider a Cournot duopoly model where Q is the market output, P is the price, and q_A and q_B are the output levels produced by firms A and B, respectively. The market demand function is $Q = 110 - 0.5P$. The marginal cost is constant and equal to 40. The Cournot equilibrium is:
- $(q_A^* = 20, q_B^* = 20)$.
 - $(q_A^* = 30, q_B^* = 30)$.
 - $(q_A^* = 40, q_B^* = 40)$.
 - $(q_A^* = 60, q_B^* = 60)$.
- _____ 20. Consider a Cournot duopoly model where q_A and q_B are the output levels produced by firms A and B, respectively. Firm A's reaction function is $q_A = \frac{80 - q_B}{2}$ and firm B's reaction function is $q_B = \frac{80 - q_A}{2}$. If it believes that firm B produces 20 units of output, firm A produces ___ units of output. Firm B's response to firm A's output level is to produce ___ units. Is the market in equilibrium?
- 30; 20; Yes.
 - 20; 20; No.
 - 30; 25; Yes.
 - 30; 25; No.
- _____ 21. Consider a Cournot duopoly model where Q is the market output, P is the price, and q_A and q_B are the output levels produced by firms A and B, respectively. The market demand function is $Q = 110 - 0.5P$. The marginal cost is constant and equal to 40. The Cournot equilibrium price is:
- \$60.
 - \$80.
 - \$100.
 - \$110.
- _____ 22. Consider a price leadership model. The demand curve facing the industry leader is determined by
- subtracting the supply of the competitive fringe from the market demand.
 - subtracting the demand facing the competitive fringe from the market demand.
 - subtracting the supply of the competitive fringe from the demand facing the competitive fringe.
 - subtracting the supply of the industry leader from the market demand curve.

- _____ 23. Assume the market demand for portable audio players is $Q_D = 99,000 - 1,900P$, where Q is the number of players and P is the price of a player. There are 100 manufacturers on the market and their marginal cost is $MC = q + 10$, where q is the output of a typical firm. Assuming that each manufacturer acts as a price taker, the typical firm's supply curve is $q = \underline{\hspace{2cm}}$, the market supply curve is $Q_S = \underline{\hspace{2cm}}$, the market equilibrium price is $P = \underline{\hspace{2cm}}$ and the market equilibrium quantity is $Q = \underline{\hspace{2cm}}$.
- $q = P + 10$; $Q_S = 100P - 1,000$; $P = \$50$; $Q = 4,000$.
 - $q = P + 10$; $Q_S = 1000P - 10,000$; $P = \$30$; $Q = 20,000$.
 - $q = P - 10$; $Q_S = 1000P - 10,000$; $P = \$30$; $Q = 20,000$.
 - $q = P - 10$; $Q_S = 100P - 1,000$; $P = \$50$; $Q = 4,000$.
- _____ 24. Assume the market demand for portable audio players is $Q_D = 99,000 - 1,900P$, where Q is the number of players and P is the price of a player. The marginal cost of the market price leader is $MC = \$47$. There is a competitive fringe of 100 manufacturers – the marginal cost of each of these manufacturers is $MC = q + 10$, where q is the output of a typical firm. The following statement about the residual demand curve of the price leader is true:
- $Q_D^{residual} = 0$ for $P > \$50$.
 - $Q_D^{residual} = 100,000 - 2,000P$ for $\$10 \leq P \leq \50
 - $Q_D^{residual} = 99,000 - 1,900P$ for $P < \$10$
 - All of the above.
- _____ 25. Assume the market demand for portable audio players is $Q_D = 99,000 - 1,900P$, where Q is the number of players and P is the price of a player. The marginal cost of the market price leader is $MC = \$47$. There is a competitive fringe of 100 manufacturers – the marginal cost of each of these manufacturers is $MC = q + 10$, where q is the output of a typical firm. The price set by the price leader is:
- \$47.
 - \$47.5.
 - \$48.5.
 - \$50.
- _____ 26. Two products belong to the same market if
- they are highly substitutable.
 - they belong to the same product group.
 - cross-price elasticities between the two products are very large.
 - all of the above.
- _____ 27. Firms can choose to differentiate their products from those of their competitors. The optimum amount spent on product differentiation is the amount for which
- the marginal cost of product differentiation is equal to the marginal revenue obtained from this activity.
 - the total cost of product differentiation is equal to the total revenues obtained from this activity.
 - the marginal cost of product differentiation is equal to the price of the product.
 - none of the above.

- _____ 28. In 1972 the U.S. Federal Trade Commission brought a formal complaint against Kellogg, General Foods, and General Mills, claiming that
- these firms should increase the quality of their products to match that of supermarket generic breakfast cereal.
 - there were too few brands of cereal on the market.
 - their actions tended to establish monopoly-like pricing and profits in the market for breakfast cereal.
 - all of the above.
- _____ 29. Which model was used to analyze the FTC case against Kellogg, General Foods, and General Mills?
- the price leadership model.
 - Salop's model of spatial competition.
 - the model of a monopoly with a competitive fringe.
 - none of the above.
- _____ 30. Consider Salop's model of spatial competition. The market for a particular class of goods is pictured as a circle. Consumers are uniformly distributed around this circle and firms position their products at equal distances around the circle. A new firm will enter the market at point X, between Y and Z (which are the products of other firms), only if
- there are enough consumers with preferences close to X to warrant any expenditures to enter this market.
 - it can attract half of the consumers of Y and half of the consumers of Z.
 - it can attract more than half of the consumers of Y and Z.
 - none of the above.
- _____ 31. Consider Salop's model of spatial competition. The market for a particular class of goods is pictured as a circle. Consumers are uniformly distributed around this circle and firms position their products at equal distances around the circle. If they want to prevent new firms from entering the market the incumbent firms
- position their products so that consumers are equally divided between four products.
 - position their products so that, wherever they might try to position their products, new firms will not be able to attract enough consumers to cover their costs.
 - have to convince consumers that the products of the new firms are of a lower quality.
 - none of the above.
- _____ 32. In contrast with firms in a perfectly competitive market, firms in a monopolistically competitive market
- produce identical products.
 - face downward-sloping demand curves.
 - earn positive profits when the market is in a sustainable equilibrium.
 - all of the above.
- _____ 33. In general, the equilibrium in a monopolistically competitive market is characterized by
- positive profit, with price above marginal cost.
 - zero profit, with price above marginal cost.
 - positive profit, with price equal to average cost.
 - none of the above.
- _____ 34. The analysis of monopolistic competition was originally developed by
- E.H. Chamberlain.
 - Ronald Coase.
 - Harold Demetz.
 - none of the above.

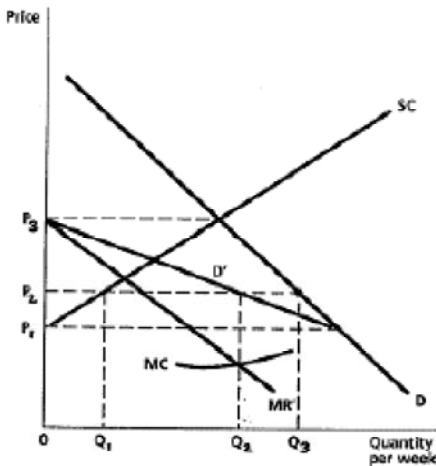
- _____ 35. Consider the following figure, depicting the situation faced by a firm on a monopolistically competitive market. What is the argument according to which $P = MC = AC$ is the only sustainable equilibrium, even in the absence of price-taking behaviour?



- A potential entrant would never charge a below P' .
 - A potential entrant could steal this firm's customers by charging a price below P' . This would generate a loss, but the entrant would make incremental profits on the units sold to other firms' customers. An entrant would never charge below $P = MC = AC$, so this is the only stable equilibrium..
 - The credible threat of entry undermines any equilibrium in which price exceeds marginal cost.
 - both (b) and (c).
- _____ 36. The total cost for a typical firm in a monopolistically competitive market is $TC(q) = 100 + q^2$ and the marginal cost is $MC(q) = 2q$. Assume that the market equilibrium is contestable and the market equilibrium output is 50 units. How many firms operate in this market?
- 4.
 - 5.
 - 10.
 - 50.
- _____ 37. Which of the following may raise entry barriers?
- product differentiation.
 - strategic pricing decisions.
 - switching costs.
 - all of the above.
- _____ 38. A CR5 of 10 tells us that:
- the combined market share of the leading five firms is 10%.
 - the combined market share of the leading 10 firms is 5%.
 - the concentration ratio in a 10-firm market is 5%.
 - the concentration ratio in a 5-firm market is 10%.
- _____ 39. Consider two groups of firms with identical costs curves, operating in monopolistically competitive markets in the long run: market A firms and market B firms. The firms from market A face highly elastic demand curves. The firms from market B face relatively inelastic (or less elastic) demand curves. In the long run
- the margin between price and marginal cost ($P^* - MC$) is larger in market B.
 - firms in market A produce more than firms in market B.
 - if the total number of units purchased is identical in markets A and B, market B would have more firms than market A.
 - all of the above.

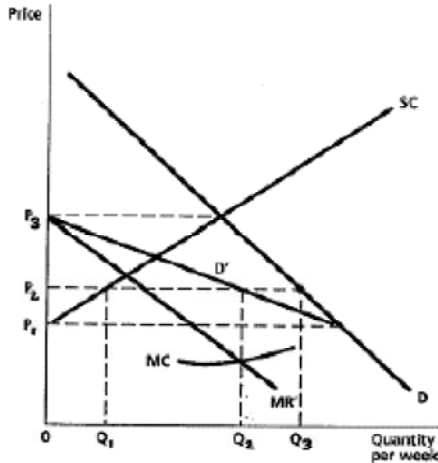
- ___ 40. Consider a monopolistically competitive market. Entry by new firms
- shifts the demand curve of a representative curve inward.
 - shifts the demand curve of a representative curve outward.
 - shifts the marginal revenue curve of a representative curve outward.
 - both (b) and (c).
- ___ 41. The following statement is true:
- In the long run firms obtain positive profits both in a monopolistic market and in a monopolistically competitive market.
 - The short-run analysis of a monopoly is very different from the short-run analysis of monopolistic competition.
 - The long-run analysis of a monopoly is different from the long-run analysis of monopolistic competition.
 - none of the above.

___ 42. The following figure depicts the situation of a price-setting leader firm facing a competitive fringe. SC represents the supply of the competitive fringe. The demand curve D represents the total demand for the industry product, while D' and MR' represent the demand and marginal revenue facing the price leader. The leader firm has marginal costs given by MC. What price will the leader firm set and how much output will it produce?



- P_1, Q_2 .
- P_3, Q_3 .
- P_2, Q_1 .
- P_2, Q_2 .

- _____ 43. The following figure depicts the situation of a price-setting leader firm facing a competitive fringe. SC represents the supply of the competitive fringe. The demand curve D represents the total demand for the industry product, while D' and MR' represent the demand and marginal revenue facing the price leader. The leader firm has marginal costs given by MC. Given the leader's choice, how much output will the fringe supply?



- a. Q_2 .
 b. $Q_3 - Q_2$.
 c. Q_1 .
 d. both (b) and (c).
- _____ 44. As the number of firms in a Cournot model becomes very large, price approaches:
 a. marginal cost.
 b. the monopoly price.
 c. average variable cost.
 d. zero.
- _____ 45. Assume the market demand function is $Q = 110 - 0.5P$, where Q is the market output and P is the price. Any firm operating on this market has a marginal cost equal to 40. Under a Cournot duopoly model with firms A and B, firm A's reaction function is $q_A = (90 - q_B) / 2$, and firm B's reaction function is $q_B = (90 - q_A) / 2$, where q_A and q_B represent the quantities produced by firm A and firm B, respectively. Find the Cournot duopoly equilibrium, the monopoly equilibrium, and the equilibrium under perfect competition.
 a. ($Q^{\text{Cournot}} = 50, P^{\text{Cournot}} = 85$); ($Q^M = 40, P^M = 140$); ($Q^{\text{compet}} = 65, P^{\text{compet}} = 90$)
 b. ($Q^{\text{Cournot}} = 45, P^{\text{Cournot}} = 130$); ($Q^M = 60, P^M = 100$); ($Q^{\text{compet}} = 45, P^{\text{compet}} = 40$)
 c. ($Q^{\text{Cournot}} = 30, P^{\text{Cournot}} = 100$); ($Q^M = 45, P^M = 130$); ($Q^{\text{compet}} = 90, P^{\text{compet}} = 40$)
 d. ($Q^{\text{Cournot}} = 60, P^{\text{Cournot}} = 100$); ($Q^M = 45, P^M = 130$); ($Q^{\text{compet}} = 90, P^{\text{compet}} = 40$)

Econ8500_Imperfect_Compensation

Answer Section

MULTIPLE CHOICE

1. ANS: B
Despite the small number of firms, each firm acts as a price taker in a quasi-competitive model.

PTS: 1 REF: 365
2. ANS: D
Firms are price-takers in a quasi-competitive model and the market price must equal the marginal cost. The firms operate only if this price is equal to or greater than the average cost – if it is lower than the average cost they shut down.

PTS: 1 REF: 366
3. ANS: D
In a cartel model firms coordinate to act as a multiplant monopoly and produce a level of output for which marginal revenue equals marginal cost in each “plant”.

PTS: 1 REF: 367
4. ANS: A
In a cartel model firms coordinate to act as a multiplant monopoly and produce a level of output for which marginal revenue equals marginal cost in each plant (to achieve monopoly profits).

PTS: 1 REF: 367
5. ANS: C
The formation of a cartel contravenes Section 45 of Canada’s Competition Act. Coordination among firms is difficult because each firm has an incentive to deviate from the agreement and produce more, since the market price is higher than marginal cost. A large amount of information about market demand functions and marginal cost functions is needed to coordinate a cartel. A cartel maximizes profits, so (c) is false.

PTS: 1 REF: 367
6. ANS: A
Firms choose the output level for which marginal cost equals marginal revenue, which leads to a price higher than marginal cost.

PTS: 1 REF: 367
7. ANS: C
Each firm acts as a price taker in a competitive or quasi-competitive model, and firms coordinate their decisions to act as a multiplant monopoly in a cartel. The price leadership model involves a price-leading firm, and several firms which are price followers.

PTS: 1 REF: 375
8. ANS: D
The price leader sets the price and the firms from the competitive fringe charge the same price.

PTS: 1 REF: 375

9. ANS: B

According to the Cournot model firm A chooses its output level assuming that the output level of firm B is fixed and will not be adjusted in response to firm A's actions.

PTS: 1 REF: 372

10. ANS: C

In a Cournot equilibrium each firm produces a profit maximizing output level given the output level produced by the other firm.

PTS: 1 REF: 372

11. ANS: D

The law of one price is relaxed, since markets consist of goods that may vary from firm to firm and consumers may have preferences about which supplier to patronize.

PTS: 1 REF: 378

12. ANS: C

If the marginal profits generated by an additional dollar spent on advertising are positive the dollar should be spent on advertising. (a) is false because we do not know whether the additional revenues cover the additional costs – we only know that the marginal cost of advertising is one dollar, but we do not have any information about other additional costs involved. (b) does not give any information about the change in revenues, and (c) has no information on cost or revenue changes.

PTS: 1 REF: 378

13. ANS: A

The equilibrium is sustainable only if firms produce where $P = MC = AC$, so that potential entrants have no incentive to enter the market while the firms already on the market still break even.

PTS: 1 REF: 382

14. ANS: C

There are no barriers to entry in a contestable market, and no profits either, since firms can only break even. The firms may or may not be price takers. This makes (a), (b) and (d) false. William Baumol defined contestable markets as markets in which “entry is absolutely free and exit is absolutely costless”, so (c) is the correct answer.

PTS: 1 REF: 383

15. ANS: C

The concentration ratio measures the combined market share of the leading firms in an industry.

PTS: 1 REF: 391

16. ANS: C

Under a quasi-competitive model $P = MC$. Under a cartel solution $MR = MC$. We know that $MR = P(1+1/e) = P(1 + 1/-3) = 2/3 P$, so $2/3 P = MC$ or $P = 1.5 MC$.

PTS: 1 REF: 369

17. ANS: B

Profits are maximized at a level of output for which the marginal revenue is equal to the marginal cost, or $MR = 40$ in our case. For a linear demand curve the marginal revenue curve is twice as steep as the demand curve. Because both curves have the same P-intercept, the MR curve always bisects the horizontal distance between the price axis and the demand curve. In other words, we need to find the level of Q for which $P = MC$ and divide it by two to obtain the profit maximizing level of output. $Q = 100 - 0.5P \Leftrightarrow 0.5P = 100 - Q \Leftrightarrow P = 200 - 2Q = 40 \Leftrightarrow Q = 80$. If we divide this by two we obtain $Q^* = 40$, which leads to a price level of $P^* = 200 - 80 = 120$.

PTS: 1 REF: 370

18. ANS: A

The total market output is given by $Q = q_A + q_B = 100 - 0.5P \Rightarrow q_A = 100 - q_B - 0.5P$. According to the rule from footnote 3 on page 370, firm A will produce half of the output level corresponding to a price of \$40, after allowing for firm B's production. This leads to $q_A = (100 - q_B - 0.5 \times 40) / 2 = (100 - q_B - 20) / 2 = (80 - q_B) / 2$, which is firm A's reaction function.

PTS: 1 REF: 371

19. ANS: B

The total market output is given by $Q = q_A + q_B = 110 - 0.5P \Rightarrow q_A = 110 - q_B - 0.5P$. According to the rule from footnote 3 on page 370, firm A will produce half of the output level corresponding to a price of \$40, after allowing for firm B's production. This leads to $q_A = (110 - q_B - 0.5 \times 40) / 2 = (110 - q_B - 20) / 2 = (90 - q_B) / 2$, which is firm A's reaction function. Symmetrically, firm B's reaction function is $q_B = (90 - q_A) / 2$. In equilibrium $q_A = q_B$, so $q_A = (90 - q_A) / 2 \Rightarrow q_A^* = 30$ and $q_B^* = 30$.

PTS: 1 REF: 372

20. ANS: D

Firm A's response to B's output level of 20 units is $q_A = \frac{80 - 20}{2} = 30$. Firm B's response to A's output

level is $q_B = \frac{80 - 30}{2} = 25$. The market is not in equilibrium because the firms' decisions are not consistent with each other: firm A chooses to produce 30 units as a response to the expected 20 units of output produced by firm B, while firm B responds with 25 units of output. The equilibrium condition is $q_A = q_B$, which leads to $q_A = q_B = 80/3$.

PTS: 1 REF: 372

21. ANS: C

The total market output is given by $Q = q_A + q_B = 110 - 0.5P \Rightarrow q_A = 110 - q_B - 0.5P$. According to the rule from footnote 3 on page 370, firm A will produce half of the output level corresponding to a price of \$40, after allowing for firm B's production. This leads to $q_A = (110 - q_B - 0.5 \times 40) / 2 = (110 - q_B - 20) / 2 = (90 - q_B) / 2$, which is firm A's reaction function. Symmetrically, firm B's reaction function is $q_B = (90 - q_A) / 2$. In equilibrium $q_A = q_B$, so $q_A = (90 - q_A) / 2 \Rightarrow q_A^* = 30$ and $q_B^* = 30$. We can find the price level from the market demand function: $Q = 110 - 0.5P \Leftrightarrow 60 = 110 - 0.5P \Leftrightarrow 0.5P = 50 \Leftrightarrow P^* = 100$.

PTS: 1 REF: 372

22. ANS: A

In a price leadership model the demand curve facing the industry leader is a residual demand curve: part of the total demand is covered by the fringe supply, and what is left represents the demand curve of the industry leader.

PTS: 1 REF: 375

23. ANS: D

Since each manufacturer is a price taker, they all choose to produce an output level for which $P = MC \Leftrightarrow P = q + 10 \Leftrightarrow q = P - 10$. This is a typical manufacturer's supply curve. The market supply curve is given by $100q = Q_s = 100P - 1,000$. The market equilibrium price and quantity come from the

$Q_s = Q_D$ condition, which leads to $100P - 1,000 = 99,000 - 1,900P \Leftrightarrow 2,000P = 100,000 \Leftrightarrow P = \50
 $Q = 100P - 1,000 = 5,000 - 1,000 = 4,000$

PTS: 1 REF: 376

24. ANS: D

Since each manufacturer belonging to the competitive fringe is a price taker, they all choose to produce an output level for which $P = MC \Leftrightarrow P = q + 10 \Leftrightarrow q = P - 10$. This is a typical manufacturer's supply curve. The supply curve of the competitive fringe is given by $100q = Q_s = 100P - 1,000$. The minimum price required by these manufacturers can be found by setting $Q_s = 0$, which implies that $P = 10$. The

market equilibrium price and quantity come from the $Q_s = Q_D$ condition, which leads to

$100P - 1,000 = 99,000 - 1,900P \Leftrightarrow 2,000P = 100,000 \Leftrightarrow P = \50

$Q = 100P - 1,000 = 5,000 - 1,000 = 4,000$

For a price level above \$50 the entire market demand is satisfied by the competitive fringe – there is no residual demand for the price leader. For a price level below \$10 the competitive fringe does not supply anything, so the residual demand is equal to the market demand.

For a price level between \$10 and \$50 dollars the residual demand is the difference between the market demand and the competitive fringe supply:

$Q_D^{residual} = 99,000 - 1,900P - (100P - 1,000) = 100,000 - 2,000P$. To summarize, the residual demand curve is given by:

$$Q_D^{residual} = \begin{cases} 0 & \text{for } P > \$50 \\ 100,000 - 2,000 & \text{for } \$10 \leq P \leq \$50, \text{ and all statements are true.} \\ 99,000 - 1,900P & \text{for } P < \$10 \end{cases}$$

PTS: 1 REF: 376

25. ANS: C

It can be shown (see question 24) that the residual demand facing the price leader is

$$Q_D^{residual} = \begin{cases} 0 & \text{for } P > \$50 \\ 100,000 - 2,000P & \text{for } \$10 \leq P \leq \$50. \\ 99,000 - 1,900P & \text{for } P < \$10 \end{cases}$$

The price leader will not set a price lower than \$10 since its marginal cost is constant and equal to \$47, but instead will choose a level of output for which $MR = MC$.

$$Q_D^{residual} = 100,000 - 2,000P \Rightarrow P = 50 - \frac{1}{2,000}Q \Rightarrow MR(Q) = 50 - \frac{1}{1,000}Q$$

$$MR(Q) = MC \Leftrightarrow 50 - \frac{1}{1,000}Q = 47 \Leftrightarrow \frac{Q}{1,000} = 3 \Leftrightarrow Q = 3,000, P = 50 - \frac{3,000}{2,000} = 50 - 1.5 = 48.5$$

PTS: 1 REF: 376

26. ANS: D

Two products belong to the same market if they belong to the same product group. If cross-price elasticities between two products are high the two products are highly substitutable, which means that they belong to the same product group.

PTS: 1 REF: 379

27. ANS: A

A firm's profits increase as long as the marginal cost of product differentiation is larger than the marginal revenue generated by this activity and they decrease when the marginal cost is lower than the marginal revenue. Profits are maximized when the marginal cost of product differentiation is equal to the marginal revenue from this activity.

PTS: 1 REF: 379

28. ANS: C

The FTC claimed that the three breakfast cereal firms violated competition laws, conspiring to protect their monopolistic position by keeping other firms out of the market.

PTS: 1 REF: 379

29. ANS: B

Salop's "circle" model of spatial competition can be used to show that the breakfast cereal firms did not violate competition.

PTS: 1 REF: 380

30. ANS: A

If a firm positions a product at point X it will attract half of the consumers situated between X and Y, and half of the consumers situated between X and Z. The firm will only enter the market if it can attract enough consumers to cover its expenditures. If Y and Z are too close on the circle the firm will not enter.

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31. ANS: B
If a new firm cannot find a niche large enough to allow it to recover its costs, it will not enter the market. The incumbent firms have to ensure that the distance between their products is small enough not to allow new firms to recover their costs if they enter the market.
- PTS: 1 REF: 380
32. ANS: B
A monopolistically competitive market is a market in which each firm faces a negatively sloped demand curve. Firms in a perfectly competitive market are price takers and face horizontal demand curves. Demand curves are negatively sloped because each firm produces a slightly differentiated product. Entry reduces profits to zero in the long run.
- PTS: 1 REF: 381
33. ANS: B
In the long run profits are driven to zero. Because firms face downward-sloping demand curves, it is possible for the price level for which $MR = MC$ to be above the marginal cost.
- PTS: 1 REF: 382
34. ANS: A
The analysis of monopolistically competitive markets was originally developed by E. H. Chamberlain in “The Theory of Monopolistic Competition”.
- PTS: 1 REF: 382
35. ANS: D
A potential entrant would charge a price below P' , stealing the firm’s customers and incurring a loss. This strategy is profitable because the firm can charge the same price (below P') to other firms’ customers (since those firms also charge a price above marginal cost) and obtain incremental profits on those sales. This only time when the position of an incumbent firm is not threatened by an potential entrant is when the incumbent charges $P = MC = AC$.
- PTS: 1 REF: 382
36. ANS: B
Each firm produces a level of output corresponding to $AC(q) = MC(q)$. The average cost curve is given by $TC(q)/q = 100/q + q$. If $AC(q^*) = MC(q^*)$ then $100/q^* + q^* = 2q^* \Rightarrow q^* = 10$. The total market output is 50 and each firm produces 10 units, so the equilibrium number of firms is 5.
- PTS: 1 REF: 383
37. ANS: D
Product differentiation may raise entry barriers by creating strong brand loyalty. Strategic pricing decisions may also deter entry if existing firms use them to convince firms wishing to enter that it would be unprofitable to do so. Switching costs incurred by consumers when they move from one firm to another (for example costs associated with learning a new software) may represent an entry barrier if they prevent an entrant from acquiring a share of the market.
- PTS: 1 REF: 387
38. ANS: A
CR5 measures the market share of the leading five firms in a market. A CR5 of 10 means that the largest five firms have 10% of the market.
- PTS: 1 REF: 391

39. ANS: D
The firms from market A face relatively more elastic demand curves than the firms from market B. In graphical terms, market A firms face flatter demand curves. Since the cost curves are identical, the price corresponding to the tangency between the demand curve and the average cost curve is higher for the steeper market B demand curves. Thus the margin between price and marginal cost is larger in market B. A higher price corresponds to a lower equilibrium output per firm in market B. If each firm produces less, but the total quantity is the same, there will be more firms in market B than in market A.
- PTS: 1 REF: 382
40. ANS: A
A new entrant reduces the residual demand for a representative firm, shifting its demand and marginal revenue curves inward.
- PTS: 1 REF: 382
41. ANS: B
Firms do not earn profits in the long run in a monopolistically competitive market, so (a) is false. In the short-run both a firm belonging to a monopolistically competitive market and a monopoly choose a price and a level of output for which $MR = MC$, so (b) is false. In the long run a firm from a monopolistically competitive market chooses a level of output for which $P = MC = AC$, while the profit-maximizing condition for a monopoly is still $MR = MC$. Thus (c) is true
- PTS: 1 REF: 382
42. ANS: D
The price leader will produce where $MR' = MC$. The corresponding output level is Q_2 . To find the price we have to go up to the demand curve facing the price leader (D'). The resulting price is P_2 .
- PTS: 1 REF: 376
43. ANS: D
The price leader will produce where $MR' = MC$. The corresponding output level is Q_2 . To find the price we have to go up to the demand curve facing the price leader (D'). The resulting price is P_2 . The total market demand at this price is Q_3 , so the fringe will supply $Q_3 - Q_2$. We can also read the quantity supplied by the competitive fringe from the supply curve SC : Q_1 corresponds to P_2 . This makes both (b) and (c) correct.
- PTS: 1 REF: 376
44. ANS: A
As the number of firms in a Cournot model becomes very large, the equilibrium approaches the competitive equilibrium, where price equals marginal cost.
- PTS: 1 REF: 369

45. ANS: D

Since the two reaction functions are symmetrical, the Cournot duopoly equilibrium can be found by substituting q_A for q_B in firm A's reaction function: $q_A = (90 - q_A) / 2$, so $q_A = q_B = 30$. The equilibrium price can be found from the market demand function: $30 + 30 = 110 - 0.5P$, so $P^{\text{Cournot}} = 100$. The market output is $Q^{\text{Cournot}} = 60$. If the market is served by a monopoly the equilibrium can be determined from the $MR = MC$ condition. $Q = 110 - 0.5P \Rightarrow P = 220 - 2Q$. The marginal revenue curve is twice steeper, so $MR(Q) = 220 - 4Q$. The $MR(Q) = MC$ condition becomes: $220 - 4Q = 40 \Rightarrow Q^M = 45$, $P^M = 130$. If the market is perfectly competitive, the price will be equal to the marginal cost, i.e. $P^{\text{compet}} = 40$, and $Q^{\text{compet}} = 110 - 0.5 \times 40 = 90$. We can see that $P^M > P^{\text{Cournot}} > P^{\text{compet}}$ and $Q^M < Q^{\text{Cournot}} < Q^{\text{compet}}$.

PTS: 1

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