

(1) (from page 108) Match each industry description with the proper identification by drawing a line between the description and identification.

- |  |                                 |
|--|---------------------------------|
| ➤ a market with many buyers and sellers with roughly equal market power, each selling / buying virtually identical products. | <i>oligopoly</i>                |
| ➤ a market with one seller of a product with no close substitutes  | <i>oligopsony</i>               |
| ➤ a market with one buyer of a product with no close substitutes   | <i>monopoly</i>                 |
| ➤ a market with a few sellers of virtually identical products  | <i>monopsony</i>                |
| ➤ a market with a few or many sellers of differentiated products of a single good  | <i>perfect competition</i>      |
| ➤ a market with a few buyers of virtually identical products   | <i>monopolistic competition</i> |

(2) Give an example of a good sold under each market structure listed below.

monopoly:

monopsony:

oligopoly:

oligopsony:

perfect competition:

monopolistic competition:

**One-Shot Price Setting Game (Pages 282-283, 289-290)**

The payoff structure for the One-Shot Price Setting Game is given below.

|                       |                          | ADM's Action             |                      |
|-----------------------|--------------------------|--------------------------|----------------------|
|                       |                          | Cooperate,<br>High Price | Defect,<br>Low Price |
| Ajinomoto's<br>Action | Cooperate,<br>High Price | \$50 / \$50              | \$60 / \$10          |
|                       | Defect,<br>Low Price     | \$10 / \$60              | \$30 / \$30          |

For the following questions, pretend that you are ADM.

- (3) If you charge a high price and your competitor charges a high price, your profits are \_\_\_\_\_.
- (4) If you charge a high price and your competitor charges a low price, your profits are \_\_\_\_\_.
- (5) If you charge a low price and your competitor charges a high price, your profits are \_\_\_\_\_.
- (6) If you charge a low price and your competitor charges a low price, your profits are \_\_\_\_\_.
- (7) A \_\_\_\_\_ strategy is a strategy which yields the highest payoff regardless of the other players' actions.
- (8) In the game above, what is the dominant strategy for ADM? \_\_\_\_\_
- (9) In the game above, what is the dominant strategy for Ajinomoto? \_\_\_\_\_
- (10) When all players play their dominant strategy, a \_\_\_\_\_ strategy equilibrium exists. In the above game, this equilibrium is

ADM:

Ajinomoto:

- (11) In a \_\_\_\_\_ Equilibrium, all players are playing their best strategy, given the strategies played by their opponents (pages 289-290).



**Cigarette Advertising Game – A Real Game!**

Suppose there are two cigarette manufacturers: Philip Morris and Reynolds. The decision is whether or not to advertise cigarettes on television. Assume that advertising on television impacts what brand smokers purchase, but not whether they smoke, which was largely the case in the 1960's.

Consider the Advertising Game Below

|          |                  | Philip Morris    |              |
|----------|------------------|------------------|--------------|
|          |                  | Do Not Advertise | Advertise    |
| Reynolds | Do Not Advertise | \$50<br>\$50     | \$60<br>\$20 |
|          | Advertise        | \$20<br>\$60     | \$30<br>\$30 |

- (20) What is the Dominant Strategy Equilibrium?
  
- (21) What is the Nash Equilibrium?
  
- (22) What strategies yield both firms the highest payout?
  
- (23) How did the cigarette companies reach this “optimal” set of strategies, despite the fact that it is neither a Dominant nor a Nash Equilibrium?
  
- (24) This really happened, and profits in the cigarette industry rose by \_\_\_\_\_ million!

**The equilibriums described above are only equilibriums when the game is played ONCE.** When the game is repeated over and over, calculating equilibriums require more advanced thinking, mathematics, and often, mathematical simulation.

(25) The \_\_\_\_\_ theorem is a mathematical proof showing that if the price-setting game is played an infinite number of times and players are rational, they will develop cooperate strategies, even if they are ultimately competitors.

(26) In the Repeating Price-Setting Game, and any game where cooperation is best for all but defecting is

best for the single individual, \_\_\_\_\_ seems to be among the best strategies to employ.

(27) \_\_\_\_\_ collusion is an unspoken but understood agreement to conclude, held together by credible threats of punishment to defectors.

(28) In laboratory experiments, tacit collusion rarely occurs with more than \_\_\_\_\_ or more firms—but it can!

(29) 4 factors that facilitate tacit collusion are

1.

2.

3.

4.

(30) A market where there are a few sellers of identical goods is referred to as a (an)

- (a) monopoly
- (b) monopsony
- (c) oligopoly
- (d) oligopsony
- (e) monopolistic competition
- (f) perfect competition

(31) A market where sellers each produce a differentiated product of a general good is referred to as a (an)

- (a) monopoly
- (b) monopsony
- (c) oligopoly
- (d) oligopsony
- (e) monopolistic competition
- (f) perfect competition

(32) A strategy that always yields the highest payoff regardless of the opponents' strategies is called a (an)

- (a) dominant strategy
- (b) Nash strategy
- (c) tit-for-tat strategy
- (d) vampire bat strategy

(33) An equilibrium where every player is satisfied with their strategy, given the strategies played by all other players, is referred to as a(an)

- (a) dominant strategy equilibrium
- (b) Nash Equilibrium
- (c) tit-for-tat equilibrium
- (d) vampire bat equilibrium

(34) In the One-Shot Price Setting Game below, what is the Nash Equilibrium?

|            |     | Your competitor's price |           |           |           |            |           |           |           |           |           |     |
|------------|-----|-------------------------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----|
|            |     | 0                       | 10        | 20        | 30        | 40         | 50        | 60        | 70        | 80        | 90        | 100 |
| Your Price | 10  | <b>80</b>               | 95        | 110       | 125       | 140        | 145       | 150       | 155       | 160       | 165       |     |
|            | 20  | 70                      | <b>85</b> | 100       | 115       | 130        | 135       | 140       | 145       | 150       | 155       |     |
|            | 30  | 60                      | 75        | <b>90</b> | 105       | 120        | 125       | 130       | 135       | 140       | 145       |     |
|            | 40  | 50                      | 65        | 80        | <b>95</b> | 110        | 115       | 120       | 125       | 130       | 135       |     |
|            | 50  | 40                      | 55        | 70        | 85        | <b>100</b> | 105       | 110       | 115       | 120       | 125       |     |
|            | 60  | 30                      | 45        | 60        | 75        | 90         | <b>95</b> | 100       | 105       | 110       | 115       |     |
|            | 70  | 20                      | 35        | 50        | 65        | 80         | 85        | <b>90</b> | 95        | 100       | 105       |     |
|            | 80  | 10                      | 25        | 40        | 55        | 70         | 75        | 80        | <b>85</b> | 90        | 95        |     |
|            | 90  | 0                       | 15        | 30        | 45        | 60         | 65        | 70        | 75        | <b>80</b> | 85        |     |
|            | 100 | 0                       | 5         | 20        | 35        | 50         | 55        | 60        | 65        | 70        | <b>75</b> |     |

- (a) 10, 10
- (b) 50, 50
- (c) there is no Nash Equilibrium
- (d) none of the above

(35) In the One-Shot Price Setting Game below, what is the Dominant Strategy Equilibrium?

|            |     | Your competitor's price |           |           |           |            |           |           |           |           |           |     |
|------------|-----|-------------------------|-----------|-----------|-----------|------------|-----------|-----------|-----------|-----------|-----------|-----|
|            |     | 0                       | 10        | 20        | 30        | 40         | 50        | 60        | 70        | 80        | 90        | 100 |
| Your Price | 10  | <b>80</b>               | 95        | 110       | 125       | 140        | 145       | 150       | 155       | 160       | 165       |     |
|            | 20  | 70                      | <b>85</b> | 100       | 115       | 130        | 135       | 140       | 145       | 150       | 155       |     |
|            | 30  | 60                      | 75        | <b>90</b> | 105       | 120        | 125       | 130       | 135       | 140       | 145       |     |
|            | 40  | 50                      | 65        | 80        | <b>95</b> | 110        | 115       | 120       | 125       | 130       | 135       |     |
|            | 50  | 40                      | 55        | 70        | 85        | <b>100</b> | 105       | 110       | 115       | 120       | 125       |     |
|            | 60  | 30                      | 45        | 60        | 75        | 90         | <b>95</b> | 100       | 105       | 110       | 115       |     |
|            | 70  | 20                      | 35        | 50        | 65        | 80         | 85        | <b>90</b> | 95        | 100       | 105       |     |
|            | 80  | 10                      | 25        | 40        | 55        | 70         | 75        | 80        | <b>85</b> | 90        | 95        |     |
|            | 90  | 0                       | 15        | 30        | 45        | 60         | 65        | 70        | 75        | <b>80</b> | 85        |     |
|            | 100 | 0                       | 5         | 20        | 35        | 50         | 55        | 60        | 65        | 70        | <b>75</b> |     |

- (a) 10, 10
- (b) 50, 50
- (c) there is no Dominant Strategy Equilibrium
- (d) none of the above

(36) In the Repeating Price-Setting Game, and any game where cooperation is best for all but defecting is best for the single individual, \_\_\_\_\_ seems to be among the best strategies to employ.

- (a) live and let live
- (b) always cooperate
- (c) always defect
- (d) tit-for-tat
- (e) always forgive

(37) \_\_\_\_\_ collusion is an unspoken but understood agreement to collude, held together by credible threats of punishment to defectors.

- (a) secret
- (b) tacit
- (c) brio
- (d) illegal

(38) In laboratory experiments, tacit collusion rarely occurs with more than \_\_\_\_\_ firms—but it can!

- (a) 1
- (b) 2
- (c) 3
- (d) 4
- (e) more than 4

**For each question, answer whether the sentence describes a situation that facilitates tacit collusion by indicating true or false.**

(39) There are only a few sellers in the market, and sellers continually go out of business to be replaced by new firms.

*TRUE / FALSE This description describes a situation that facilitates tacit collusion*

(40) Firms are able to communicate with one another indirectly via price advertisements and interviews in magazines, but cannot outright price-fix.

*TRUE / FALSE This description describes a situation that facilitates tacit collusion*

(41) The managers of firms in a market come from markets where tacit collusion is not usually seen.

*TRUE / FALSE This description describes a situation that facilitates tacit collusion*

(42) Some firms in a market have higher costs than other firms.

*TRUE / FALSE This description describes a situation that facilitates tacit collusion*

| Prisoners' Dilemma<br>(jail time given their strategies) |               | Ram                     |                         |
|--|---------------|-------------------------|-------------------------|
|  |               | Don't Confess           | Confess                 |
| Rod  | Don't Confess | 6 months / 6 months     | no jail time / 10 years |
|  | Confess       | 10 years / no jail time | 2 years / 2 years       |

(43) In the prisoner's dilemma game, the dominant strategy for Rod is to (circle all that are correct)

- (a) don't confess
- (b) confess
- (c) there is no dominant strategy for Rod

(44) In the prisoner's dilemma game, the dominant strategy equilibrium is (circle all that are correct)

- (a) don't confess, don't confess
- (b) confess, confess
- (c) Rod = confess, Ram = don't confess
- (d) Rod = don't confess, Ram = confess
- (e) there is no dominant strategy equilibrium

(45) In the prisoner's dilemma game, the Nash equilibrium is (circle all that are correct)

- (a) don't confess, don't confess
- (b) confess, confess
- (c) Rod = confess, Ram = don't confess
- (d) Rod = don't confess, Ram = confess
- (e) there is no Nash Equilibrium

| Battle of the Sexes<br>(utility of attending event) |                       | Beth                  |             |
|---|-----------------------|-----------------------|-------------|
|   |                       | Kings of Leon Concert | Chick-Flick |
| Bailey  | Kings of Leon Concert | 2, 1                  | 0, 0        |
|   | Chick-Flick           | 0, 0                  | 1, 2        |

(46) In the Battle of the Sexes game, the dominant strategy for Bailey is (circle all that are correct)

- (a) concert
- (b) chick-flick
- (c) there is no dominant strategy for Bailey

(47) In the Battle of the Sexes game, the dominant strategy equilibrium is (circle all that are correct)

- (a) concert, concert
- (b) chick-flick, chick-flick
- (c) Bailey = concert, Beth = chick-flick
- (d) Bailey = chick-flick, Beth = concert
- (e) there is no dominant strategy equilibrium

(48) In the Battle of the Sexes game, the Nash equilibrium is (circle all that are correct)

- (a) concert, concert
- (b) chick-flick, chick-flick
- (c) Bailey = concert, Beth = chick-flick
- (d) Bailey = chick-flick, Beth = concert
- (e) there is no Nash Equilibrium

This is a game called matching pennies, where each player reveals a heads or tails simultaneously. If the two pennies match, player 2 wins player 1's penny, and if they do not match then 1 wins 2's penny.

|          |       | Player 2 |         |
|----------|-------|----------|---------|
|          |       | Heads    | Tails   |
| Player 1 | Heads | 1<br>-1  | -1<br>1 |
|          | Tails | -1<br>1  | 1<br>-1 |

(49) The dominant strategy in this game is (*circle all that are correct*)

- (a) heads
- (b) tails
- (c) there is no dominant strategy

(50) The dominant strategy equilibrium in this game is (*circle all that are correct*)

- (a) heads, heads
- (b) tails, tails
- (c) player 1 = heads, player 2 = tails
- (d) player 1 = tails, player 2 = heads
- (e) there is no dominant strategy equilibrium

(51) The Nash Equilibrium this game is (*circle all that are correct*)

- (a) heads, heads
- (b) tails, tails
- (c) player 1 = heads, player 2 = tails
- (d) player 1 = tails, player 2 = heads
- (e) there is no Nash Equilibrium

(52) When Anheuser-Busch publicly stated, "We don't want to start a bloodbath, but whatever the competition wants to do, we'll do," they were employing a

- (a) 3<sup>rd</sup> degree price discrimination strategy
- (b) low-price guarantee strategy
- (c) trigger pricing strategy
- (b) dominant strategy

(53) When Kroger ran newspaper ads in North Carolina advertising its price, but also stating it would meet any lower price of a competitor, they were employing a

- (a) 3<sup>rd</sup> degree price discrimination strategy
- (b) low-price guarantee strategy
- (c) trigger pricing strategy
- (b) dominant strategy