

Introduction to Game Theory in Business and Economics

Test Bank

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Note to the Instructor

This section of the Instructor's Manual is a test bank that consists of over seven hundred multiple choice questions. I have done my best to make the test bank comprehensive, clear and as accurate as possible. In spite of this, errors of one sort or another do occasionally crop up. If this should happen, I sincerely hope that it does not create any difficulties for you. Please feel free to contact me (tjwebecon@gmail.com) with at any comments and recommendations that you may have.

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Chapter 1 – Introduction to Game Theory

Multiple choice questions

- 1.1 Game theory attempts to explain:
- a. Profit maximization.
 - b. Utility maximization.
 - c. The rationing function of markets.
 - d. Strategic behavior.
 - e. Capital budgeting.

Answer: d

- 1.2 The modern version of game theory can be traced to the groundbreaking work of:
- a. Milton Bradley.
 - b. Rogers and Hammerstein.
 - c. Von Neumann and Morgenstern.
 - d. Arbuckle and Keaton.
 - e. Schilling and Harsanyi.

Answer: c

- 1.3 The modern version of the game theory can be traced to the groundbreaking work of:
- a. Konami and Atari.
 - b. Martin and Lewis.
 - c. Siegfried and Roy.
 - d. Von Neumann and Morgenstern.
 - e. Erickson and Defoe.

Answer: d

- 1.4 An assumption about static games with complete information is that:
- a. Players do not know the payoffs until after they have moved.
 - b. Players have different information about the payoff matrix.
 - c. Players are rational in that moves are based on the best possible payoffs.
 - d. The players' identities are required before making a move.
 - e. All of the above are correct.

Answer: c

1.5 Which of the following assumptions about static games with complete information is *incorrect*:

- a. Players' strategies are common knowledge.
- b. Payoffs from alternative strategy profiles are common knowledge.
- c. Each player has a dominant strategy.
- d. Players' identities are common knowledge.
- e. Noncooperative static games are examples of the prisoner's dilemma.

Answer: c

1.6 Strategic interaction:

- a. Describes the situation in which the behavior of an individual or group affects, and is affected by, the behavior of other individuals or groups.
- b. Is concerned with decision making involving move and countermove.
- c. Is not important in games in which players have strictly dominant strategies.
- d. Only *a* and *b* are correct.
- e. All of the above.

Answer: d

1.7 Simultaneous-move games are also called:

- a. Noncooperative games.
- b. Dynamic games.
- c. Static games.
- d. Normal-form games.
- e. Bargaining strategies.

Answer: c

1.8 In a simultaneous-move game:

- a. The players move in turns.
- b. Players can project forward and reason backward.
- c. Players can learn something about the intentions of rivals by observing prior moves.
- d. Players are unable to learn anything about the intentions of rivals by observing prior moves.
- e. None of the above.

Answer: d

1.9 Games in which the players alternate moves are called:

- a. Static games.
- b. Dynamic games.
- c. Simultaneous-move games.
- d. Multistage games.
- e. Answers *b* and *d* are correct.

Answer: e

- 1.10 A key assumption underlying noncooperative, static games is that the players:
- a. Behave rationally.
 - b. Act in the best interest of their rivals.
 - c. Are indifferent to payoffs in cooperative and noncooperative games.
 - d. Always adopt strategies that lead to “fair” outcomes.
 - e. None of the above.

Answer: a

- 1.11 In a two-player, static game, players move:
- a. At different times, but without knowledge of a rival’s move.
 - b. At the same time, but with prior knowledge of a rival’s move.
 - c. At same time, but without prior knowledge of a rival’s move.
 - d. Answers *a* and *c* above.
 - e. None of the above.

Answer: d

- 1.12 A two-player, static game is one in which the players move:
- a. At different times, but without knowledge of the other player’s move.
 - b. At the same time, but with prior knowledge of the other player’s move.
 - c. Sequentially.
 - d. None of the above.
 - e. All of the above.

Answer: a

- 1.13 A static game:
- a. Is the same thing as a simultaneous-move game in that both players move without knowledge of the other player’s move.
 - b. Is the same thing as a simultaneous-move game except that the players are unaware of the payoffs from alternative strategy profiles.
 - c. Is the same thing as a sequential-move game.
 - d. None of the above.

Answer: a

- 1.14 Players in simultaneous-move games with complete information know their rival’s:
- a. Strategies, but not the payoffs from alternative strategy profiles.
 - b. Strategies, payoffs from alternative strategy profiles, and always move at the same time.
 - c. Strategies, payoffs from alternative strategy profiles, but do not necessarily move at the same time.
 - d. None of the above

Answer: b

1.15 An example of a simultaneous-move game is:

- a. Chess.
- b. Checkers.
- c. Rock-scissors-paper.
- d. Mah Jongg.
- e. Stratego.

Answer: c

1.16 In game theory, a strategy:

- a. Consists of any collection of moves and countermoves.
- b. Is a decision rule that defines a player's moves.
- c. Is the same thing as a multistage game.
- d. Must be strictly dominant.
- e. Answers *a* and *b* are correct.

Answer: b

1.17 The normal-form of a one-time, static game summarizes:

- a. Players, alternative strategies, and payoffs.
- b. Players, alternative strategies, and order of moves.
- c. Alternative strategies, payoffs, and order of moves.
- d. Players, order of moves, and payoffs.
- e. Players, stages of the game, and payoffs.

Answer: a

1.18 A collection of strategies is referred to as a:

- a. Payoff matrix.
- b. Nash equilibrium.
- c. Focal-point equilibrium.
- d. Normal-form game.
- e. Strategy profile.

Answer: e

1.19 A Nash equilibrium:

- a. Results in a payoff that is no lower than any other payoff, regardless of the strategies adopted by the other players.
- b. Results in the largest payoff for both players.
- c. Occurs when each player adopts a strategy that he or she believes is the best response to the strategy adopted by a rival.
- d. Results in the best of the worst possible payoffs.
- e. Results in the lowest opportunity loss for all players.

Answer: c

- 1.20 A _____ occurs when each player adopts a strategy is the best response to the strategy adopted by a rival.
- Bayesian equilibrium.
 - Von Neuman equilibrium.
 - Focal-point equilibrium.
 - Nash equilibrium.
 - Minimax equilibrium.

Answer: d

- 1.21 A Nash equilibrium:
- Always results in the best possible payoff for all players.
 - Occurs when each player adopts a strategy that is the best response to a strategy adopted by a rival.
 - Occurs when a player cannot improve his or her payoff by switching strategies.
 - Both *b* and *c* are correct.
 - None of the above.

Answer: d

- 1.22 Refer to Figure 1.1, which depicts a noncooperative, simultaneous-move, one-time game in which larger payoffs are preferred. Which player has a strictly dominant strategy?
- Player *A*
 - Player *B*
 - Both players
 - Neither player
 - Cannot be answered without additional information.

Answer: c

		Player <i>B</i>	
		<i>B1</i>	<i>B2</i>
Player <i>A</i>	<i>A1</i>	(5, 5)	(3, 0)
	<i>A2</i>	(0, 3)	(1, 1)

Payoffs: (Player *A*, Player *B*)

FIGURE 1.1

- 1.23 Refer to Figure 1.1, which depicts a noncooperative, simultaneous-move, one-time game in which larger payoffs are preferred. The Nash equilibrium strategy profile for this game is:
- $\{A1, B1\}$.
 - $\{A1, B2\}$.
 - $\{A2, B1\}$.
 - $\{A2, B2\}$.
 - Answers *a* and *d* are correct.

Answer: a

- 1.24 Consider the one-time, noncooperative, static game depicted in Figure 1.2. Which player has a strictly dominant strategy?
- Clarence
 - Darrow
 - Both players
 - Neither player
 - Cannot be answered without additional information.

Answer: c

		Darrow	
		<i>Confess</i>	<i>Plea bargain</i>
Clarence	<i>Confess</i>	$(-7, -7)$	$(-4, -1)$
	<i>Plea bargain</i>	$(-1, -4)$	$(-2, -2)$

Payoffs: (Clarence, Darrow)

FIGURE 1.2

- 1.25 Consider the one-time, noncooperative, static game depicted in Figure 1.2. The Nash equilibrium strategy profile for this game is:
- $\{Confess, Confess\}$.
 - $\{Confess, Plea bargain\}$.
 - $\{Plea bargain, Confess\}$.
 - $\{Plea bargain, Plea bargain\}$.
 - This game does not have a Nash equilibrium strategy profile.

Answer: d

- 1.26 Refer to noncooperative, one-time, static game depicted in Figure 1.3. If larger payoffs are preferred, which player has a strictly dominant strategy?
- Player *A*
 - Player *B*
 - Both players
 - Neither player
 - Cannot be answered without additional information.

Answer: d

		Player <i>B</i>	
		<i>B1</i>	<i>B2</i>
Player <i>A</i>	<i>A1</i>	(3, 1)	(1, 0)
	<i>A2</i>	(2, 4)	(6, 7)

Payoffs: (Player *A*, Player *B*)

FIGURE 1.3

- 1.27 Refer to noncooperative, one-time, static game depicted in Figure 1.3. The Nash equilibrium strategy profile for this game is:
- $\{A1, B1\}$.
 - $\{A1, B2\}$.
 - $\{A2, B1\}$.
 - $\{A2, B2\}$.

Which of the following is correct?

- I only.
- II only.
- III only.
- I and III only.
- II and IV only.

Answer: d

- 1.28 Refer to Figure 1.4 in which the payoffs are in millions of dollars. Suppose that Tsunami Corporation and Cyclone Company contemplating a change in their advertising strategies. Which player has a strictly dominant strategy?
- Tsunami
 - Cyclone
 - Both Tsunami and Cyclone
 - Neither Tsunami nor Cyclone

Answer: c

		Cyclone	
		<i>Magazines</i>	<i>Radio</i>
Tsunami	<i>Newspapers</i>	(\$6, \$6)	(\$4, \$8)
	<i>Television</i>	(\$8, \$4)	(\$5.5, \$5.5)

Payoffs: (Tsunami, Cyclone)

FIGURE 1.4

- 1.29 Refer to Figure 1.4 in which the payoffs are in millions of dollars. Suppose that Tsunami Corporation and Cyclone Company contemplating a change in their advertising strategies. The Nash equilibrium strategy profile for this game is:
- $\{Newspapers, Magazines\}$.
 - $\{Television, Magazines\}$.
 - $\{Newspapers, Radio\}$.
 - $\{Television, Radio\}$.

Answer: d

- 1.30 The prisoner's dilemma describes a strategic situation in which:
- It is in the best interest of all players to cooperate.
 - Each player has a incentive to adopt a strategy that results in a less than optimal outcome.
 - There is a conflict between individual and joint incentives.
 - All of the above are correct.
 - None of the above are correct.

Answer: d

- 1.31 The prisoner's dilemma describes a strategic situation in which each of the following statements is correct *except*:
- There is a conflict between each player's self interest and the combined interests of both players.
 - Each player has an incentive not to confess.
 - Cooperation results in the best outcome for both players.
 - Each player has an incentive to adopt a strategy that results in a less than optimal outcome.

Answer: b

1.32 Consider the pricing game depicted in Figure 1.5 in which payoffs are in thousands of dollars. If larger payoffs are preferred, the Nash equilibrium strategy profile for this game is:

- a. $\{High\ price, High\ price\}$.
- b. $\{Low\ price, Low\ price\}$.
- c. $\{High\ price, Low\ price\}$.
- d. $\{Low\ price, High\ price\}$.

Answer: d

		Firm B	
		<i>High price</i>	<i>Low price</i>
Firm A	<i>High price</i>	(15, 15)	(5, 25)
	<i>Low price</i>	(25, 5)	(6, 6)

Payoffs: (Firm A, Firm B)

FIGURE 1.5

1.33 Consider the pricing game depicted in Figure 1.5 in which payoffs are in thousands of dollars. If larger payoffs are preferred, this is an example of a:

- I. Game in which both players have a strictly dominant strategy.
- II. Prisoner's dilemma.
- III. Two-player, noncooperative, static game.

Which of the following is correct?

- a. I only.
- b. II only.
- c. III only.
- d. II and III only.
- e. I, II, and III.

Answer: e

1.34 Consider the advertising game depicted in Figure 1.6 in which payoffs are in thousands of dollars. If larger payoffs are preferred, the Nash equilibrium strategy profile for this game is:

- a. $\{Magazines, Newspapers\}$.
- b. $\{Magazines, Television\}$.
- c. $\{Radio, Newspapers\}$.
- d. $\{Radio, Television\}$.

Answer: a

		Company Z	
		Newspapers	Television
Company X	Magazines	(32, 47)	(29, 55)
	Radio	(16, 84)	(12, 11)

Payoffs: (Firm A, Firm B)

FIGURE 1.6

1.35 Consider the advertising game depicted in Figure 1.6 in which payoffs are in thousands of dollars. If larger payoffs are preferred, this is an example of a:

- I. Game in which both players have a strictly dominant strategy.
- II. Prisoner's dilemma.
- III. Two-player, noncooperative, static game.

Which of the following is correct?

- a. I only.
- b. II only.
- c. III only.
- d. II and III only.
- e. I, II, and III.

Answer: d