

[Frequently Asked Questions]

Game Theory

Subject:

Business Economics

B. A., 4th Semester,

Course:

Paper No. & Title:

Unit No. & Title:

Undergraduate

Paper – 403 Quantitative Techniques for Management

Unit – 4 Theory of Game, Decision Theory and Decision Analysis

Lecture No. & Title:

Lecture – 1 (One) Game Theory

Frequently Asked Questions

Q1. What are competitive games?

A1. The competitive situations with two or more competitors, having conflicting interest and where the action of one depends upon the action taken by the other, are known as competitive games. The competitors are called players. A player may be individual, a group of individuals or an organization.

Q2. What is two-person game?

A2. If a game involves only two players, then it is called a twoperson game. And if the numbers of players are more than two, the game is called n-person game.

Q3. What is zero sum game?

A3. If in a game the gains of one player are exactly equal to the losses of another player, so that the sum of gains and losses equals zero, then the game is called a zero sum game.

Q4. What is Two - person zero sum game?

A4. A game with only two players, say player A and player B is called a two-person zero sum game, if say player A's gain is equal to the loss of player B, so that total sum is zero.

Q5. Explain Strategy in game theory.

A5. The strategy for a player is the list of all possible action that he will take for every outcome that might arise. It is assumed that the rules managing the choices are known in advance to the players.

Q6. How many types of strategy are in game theory?

A6. Generally two types of strategies are employed by players in a game: Pure Strategy and Mixed strategy

Q7. Explain Pure and Mixed strategy.

A7. Pure strategy: It is a decision rule which is always used by the player to select the particular course of action. Thus each player knows in advance of all strategies out of which he always selects only one particular strategy irrespective of the strategy others may choose. The objective of the players is to maximize gains and minimize losses.

Mixed strategy: When both the players are guessing as to which course of action is to be selected on a particular circumstance with some fixed probability, it is a mixed strategic. The objective of the players is to maximize expected gains or to minimize expected losses.

Q8. Explain payoff matrix.

A8. The payoffs in terms of gains or losses, when players select their particular strategies, can be represented in the form of a matrix, called the **payoff matrix**.

Q9. What are the assumptions of game?

A9. Following are the assumptions of the Game

- 1. Each player has available to him finite number of possible courses of action.
- 2. Player A attempts to maximize gains and player B minimizes losses.

- 3. The decisions of both players are made individually prior with no communication between them.
- 4. The decision are made simultaneously and also announced simultaneously.

Q10. What are rules of Dominance in game theory?

A10. The rules of dominance are used to reduce the size of the payoff matrix. These rules help in deleting certain rows and/or columns of the payoff matrix which is inferior to atleast one of the remaining rows and/or columns in terms of payoffs to both the players.