MSTE-001
Industrial Statistics-I

Indira Gandhi National Open University
School of Sciences

Block

3

DECISION AND GAME THEORIES

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BLOCK 3 DECISION AND GAME THEORIES

In Blocks 1 and 2, you have studied applications of statistical tools in process and product control in different types of manufacturing industries.

For any individual business/organisation/company/industry, one of the key aspects of achieving its goals is that it should make the right decisions at the right time. In fact, decision making is both a science and an art. In Block 3, we introduce decision theory and discuss certain criteria of decision making. However, the selection of a criteria depends on the environment of decision making and in this block we discuss decision making under the following environments:

- Decision making under certainty,
- Decision making under uncertainty,
- Decision making under risk, and
- Decision making under conflict.

In **Unit 9** entitled **Introduction to Decision Theory** we discuss the criteria of decision making under the environments of certainty and uncertainty.

Unit 10 entitled **Decision Making Process** discusses the criteria of decision making under the environment of risk.

The environment of conflict is generally present in games. In game theory, games may broadly be classified as:

- Games with saddle point, and
- Games without saddle point.

In this block, we restrict our discussion to two-person zero-sum games.

Unit 11 entitled **Two-Person Zero-Sum Games with Saddle Point** deals with the basic concepts in game theory and solutions of games with saddle point.

In **Unit 12,** entitled **Two-Person Zero-Sum Games without Saddle Point**, we discuss some methods of solving two-person zero-sum games without saddle point.

Notations and Symbols

Sec.	:	Section
Secs.	:	Sections
Fig.	:	Figure
A_i	:	i^{th} course of action
N_i	:	i^{th} state of nature
x_{ij}	:	Payoff value corresponding to i^{th} state of nature and j^{th} course of action
v	:	Value of the game