MIND MAP: LEARNING MADE SIMPLE CHAPTER - 16

Events A & B are called mutually exclusive events if occurance of any one of them excludes occurrance of other event, i.e. they cannot occur simultaneously.

Eg: A die is thrown. Event A= All even outcomes & event B = All odd outcomes. Then A & B are mutually exclusive events, they cannot occur simultaneously.

Note: Simple events of a sample space are always mutually exclusive.

Many events that together form sample space are called exhaustive events.

Eg: A die is thrown. Event A = All even outcomes and event B = All odd outcomes. Event A & B together forms exhaustive events as it forms sample space.

- Event A or B or $(A \cup B)$ $A \cup B = \{w: w \in A \text{ or } w \in B\}$
- Event A and B or $(A \cap B)$
- $A \cap B = \{w: w \in A \text{ and } w \in B\}$ Event A but not B or (A-B)
- Event A but not B or (A–B) A–B = $A \cap B'$

If A and B are any two events, then

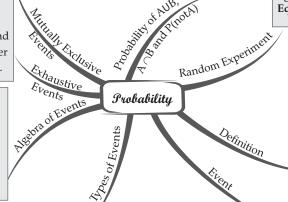
- $P(AUB) = P(A) + P(B) P(A \cap B)$
- $P(A \cap B) = P(A) + P(B) P(A \cup B)$

If A and B are mutually exclusive, then P(AUB)

= P(A) + P(B)



Probability of the event 'not A'
 P(A') = P(not A) = 1-P(A)



- An Experiment is called random experiment if it satisfies the following two conditions:
- It has more than one possible outcome.
- It is not possible to predict the outcome in advance.

Outcome: A possible result of a random experiment is called its outcome.

Sample Space: Set of all possible outcomes of a random experiment is called sample space. It is denoted by symbol 'S'.

Eg: In a toss of a coin, sample space is Head & Tail. i.e., S= {H,T} Sample Point: Each element of the Sample Space is called a sample point.

Eg: In a toss of a coin, head is a sample point

Equally Likely Outcomes: All outcome with equal probability.

Probability is the measure of uncertainty of various phenomenon, numerically. It can have positive value from 0 to 1.

Probability =
$$\frac{\text{No.of favourable outcomes}}{\text{Total no.of outcomes}}$$

Eg: Probability of getting an even no. in a throw of a

Sol. Here, favourable outcomes = {2, 4, 6} Total no. of outcomes = {1, 2, 3, 4, 5, 6}

Probability =
$$\frac{3}{6} = \frac{1}{2}$$

• Impossible and Sure Event: The empty set ϕ is called an Impossible event, where as the whole sample space 'S' is called 'Sure event'.

Eg: În a rolling of a die, impossible event is that number more than 6 and event of getting number less than or equal to 6 is sure event.

- Simple Event: If an event has only one sample point of a sample space, it is called a 'simple event'. Eg: In rolling of a die, simple event could be the event of getting number 4.
- **Compound Event:** If an event has more than one sample point, it is called a 'compound event'. **Eg:** In rolling of a die, compound event could be event of getting an even number.
- Complementary Event: Complement event to A = 'not A'

 Eg: If an event A= Event of getting odd number in a throw of a die i.e., {1, 3, 5} then ,
 complementary event to A = Event of getting an even number in a throw of a die , i.e. {2, 4, 6}

 A'= {W: W∈ S and W∉A} = S A (where S is the sample space)

It is the set of favourable outcomes. Any subset E of a sample space S is called an event.

Eg: Event of getting an even number (outcome) in a throw of a die.

Occurance of event: The event E of a sample space 'S' is said to have occurred if the outcome w of the experiment is such that $w \in E$. If the outcome w is such that $w \notin E$, we say that event E has not occurred.

