

Chapter-15

Probability

- **Probability:** If there are n elementary events associated with a random experiment and m of them are favourable to an event A then the probability of happening of event A is defined as the ratio $\frac{m}{n}$ and is denoted by $P(A)$.

- The Theoretical probability of an event E written as $P(E)$ is

$$P(E) = \frac{\text{Number of outcomes favourable of } E}{\text{Total number of outcomes}}$$

- The sum of the probability of all the elementary events of an experiment is 1.
- The probability of a sure event is 1 and probability of an impossible event is 0.
- If E is an event, in general, it is true that $P(E) + P(\overline{E}) = 1$.
- From the definition of the probability, the numerator is always less than or equal to the denominator therefore $0 \leq P(E) \leq 1$.
- **Elementary Event:** An outcome of a random experiment is called an elementary event.
- **Compound Event:** An event associated to a random experiment is a compound event, if it is obtained by combining two or more elementary events associated to the random experiment.
- **Sure Event:** Those events whose probability is one.
- **Impossible Event:** Those events whose probability is zero.
- **Occurrence of an Event:** An event A associated to a random experiment is said to occur, if any one of the elementary events associated to the event A is an outcome.