1 Set Theory

A Set is a collection of well defined objects which is denoted by a capital letter and it's elements are described by small letters or numbers.

Types of Sets

- Universal Set (ξ or U)
- Null Set (ϕ)
- Subset ($\subset$)
- Superset ($\supset$)
- Compliment of a set (A^c or $\bar{A}$)
- Equal Sets ($=$)

Operations on Sets

- Union ($\cap$)
- Intersection ($\cup$)
- De Morgans
- Laws - Associative, Distributive

1.1 Random Experiments, Events and more

If the repetition of an experiment under identical condition results in different possible outcomes, then such an experiment is called Randome Experiment or Stochastic Experiment.

Sample Space (S) is a set of all possible outcomes of a random experiment.

Event (E) is a subset of Sample Space **S**

Example Tossing of coin: **S** = {H,T}

Types of Events

- Mutually Exclusive
- Equally Likely

NOTE

Mutually Exclusive Events: are events that cannot occur at the same time like tossing of 1 coin can never give both heads and tails.

Independent Events: are events are completely independent of one another like outcome of second toss is independent of the first toss.