CHAPTER – 15

PROBABILITY

S.no	Term	Description
1	***Empirical probability***	It is a probability of event which is calculated based on experiments $$\textit{Emprical Probability} = \frac{\textit{No of trails which expected outcome came}}{\textit{Total Number of trials}}$$ ***Example:*** A coin is tossed 1000 times; we get 499 times head and 501 times tail, So empirical or experimental probability of getting head is calculated as $$p = \frac{499}{1000} = .499$$ ***Empirical probability depends on experiment and different will get different values based on the experiment***
2	Important point about events	If the event A, B, C covers the entire possible outcome in the experiment. Then, **P (A) +P (B) +P(C) =1**
3	**impossible event**	The probability of an event (U) which is impossible to occur is 0. Such an event is called an **impossible event** **P (U)=0**
4	Sure or certain event	The probability of an event (X) which is sure (or certain) to occur is 1. Such an event is called a **sure event or a certain event** **P(X) =1**
5	Probability of any event	Probability of any event can be as $$0 \leq P(E) \leq 1$$

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1	Theoretical Probability	The theoretical probability or the classical probability of the event is defined as $$P(E) = \frac{Number\ of\ outcome\ favourable\ to\ E}{Number\ of\ all\ possible\ outcome\ of\ the\ experiment}$$
2	Elementary events	An event having only one outcome of the experiment is called an elementary event. **"The sum of the probabilities of all the elementary events of an experiment is 1."** I.e. If we three elementary event A,B,C in the experiment ,then **P(A)+P(B) +P(C)=1**
3	**Complementary events**	The event $\bar{A}$, representing 'not A', is called the complement of the event A. We also say that $\bar{A}$ and A are complementary events. Also **P(A) +P($\bar{A}$)=1**
4	Sure or certain event	The probability of an event (X) which is sure (or certain) to occur is 1. Such an event is called a **sure event or a certain event** **P(X) =1**
5	Probability of any event	Probability of any event can be as $$0 \leq P(E) \leq 1$$