REPORT JUNE 17

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Course:	GreatLearning	USN:	4AL16EC409
Topic:	Probability -Meaning and Concepts,Bayes theorem,Normal Distribution	Semester & Section:	6th SEM B
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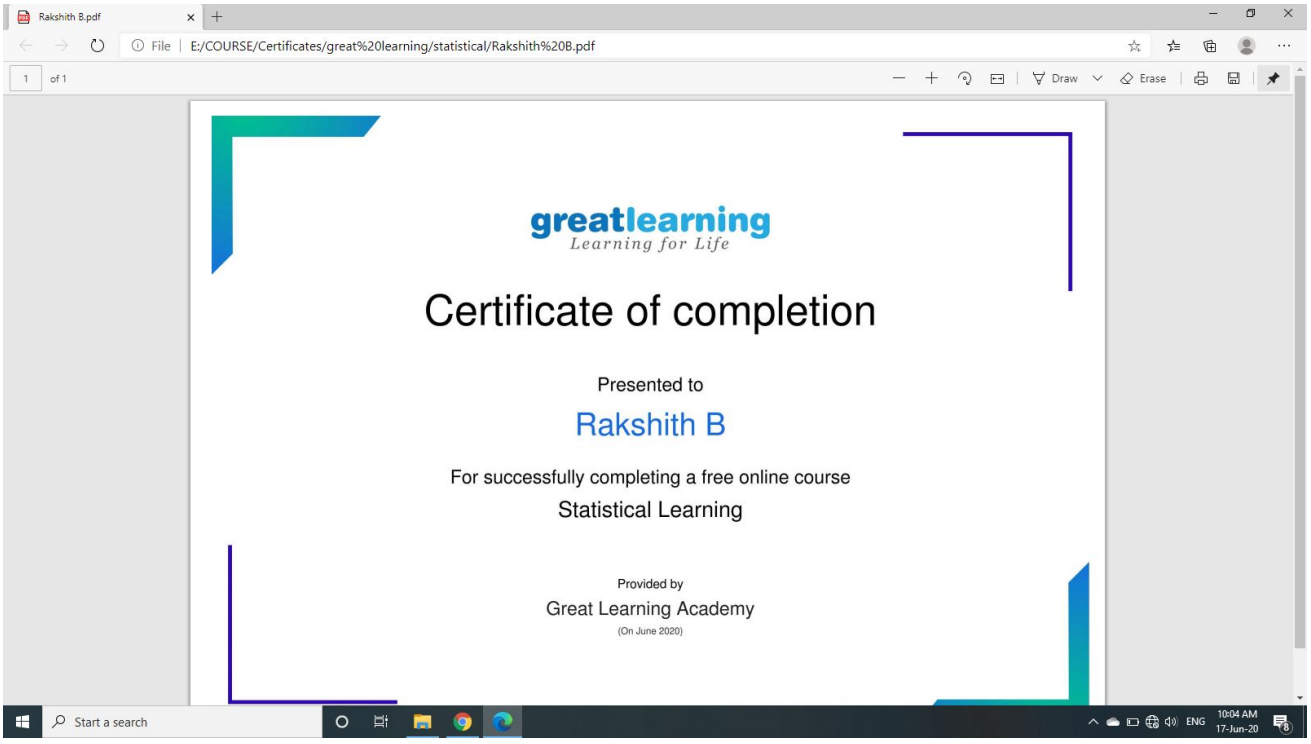
FORENOON SESSION DETAILS
Image of session



Report –

- **Probability refers to Chance or Likelihood of a particular event taking Place**
- **An Event is an Outcome of an Experiment**
- **An Experiment is a Process that is performed to Understand and observe possible outcomes**
- **Set of all Outcomes of an Experiment is called Sample Space**

Types of Probability

- **A priori Classical Probability**
- **Empirical Probability**
- **Subjective Probability**

Definition of Probability :

Probability of an event a is Defined as the ratio of Two numbers m and n .in Symbols

$P(A) = \frac{m}{n}$

where m= number of ways that are favorable to the occurrence of A and n=the total number of outcomes of the experiment

please note that P(A) is always>=0 and always<=1.

P(A) is a pure number

Rules of Probability Calculation:

1.Addition Rule-Events are mutually Exclusive

$P(A \cup B) = P(A) + P(B)$

This rule says that the probability of the union of A and B is determined by adding the probability of the events A and B

Here the symbol $(A \cup B)$ **is called A union B meaning A occurs,or B occurs or both A and B simultaneously occur.When A and B are mutually exclusive,A and B cannot simultaneously occur.**

2.Addition Rule-Events are not mutually exclusive

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

This rule says that the probability of the union of A and B is determined by adding the probability of the events A and B and then subtracting the probability of the intersection of the events A and B

This Symbol $P(A \cap B)$ **is called A intersection B meaning both A and B simultaneously occur.**

Multiplication Rule:

Independent Event:

$P(A \cap B) = P(A).P(B)$

This rule says when the two events A and B are Independent,the probability of the simultaneous occurrence of A and B are equal to the product of the probability of A and the probability of B. Of course this rule can be extended to more than two events.

Event are not Independent

$P(A \cap B) = P(A).P(B/A)$

This rule says that the probability of the intersection of the event A and B equals the product of the probability of A and the probability of B given that a has happened or known to you.This is symbolized in the second term of the above expression as P(B/A).P(B/A) is called the conditional probability of B given that A has happened.

we can also write $P(A \cap B) = P(B).P(A/B)$ **if B has already happened.**

Property of normal Distribution :

- **The normal distribution is a continuous distribution looking like a bell.**
- **It is a Beautiful distribution in which the mean,the median and the mode are equal to one another**
- **It is symmetrical about its mean**
- **If the tails of the normal distribution are extended,they will run parallel to the horizontal axis without actually touching it.**
- **The normal distribution has two parameters namely the mean and the standard deviation.**

Standard Normal Distribution

The standard normal variable is defined as follows:

$x = \frac{x-\mu}{\sigma}$

please note the z is a pure number independent of the unit of measurement.The random variable Z follows a normal distribution with mean=0 and standard deviation =1.