1. Define the Bayesian interpretation of probability.

Bayesian probability is an interpretation of the concept of probability, in which, instead of frequency or propensity of some phenomenon, probability is interpreted as reasonable expectation representing a state of knowledge or as quantification of a personal belief.

Bayesian Probability is the process of using probability to try to predict the likelihood of certain events occurring in the future, and it is used in research to judge the amount of confidence that they have in a particular result.

1. Define probability of a union of two events with equation.

The probability of the union of two events E and F equals the sum of the probability of E and the probability of F minus the probability of E and F occurring together.

*P*(*E*∪*F*) = *P*(*E*)+*P*(*F*)−*P*(*E*∩*F*)

1. What is joint probability? What is its formula?

Probabilities are combined using multiplication, therefore the joint probability of independent events is calculated as the probability of event A multiplied by the probability of event B. This can be stated formally as follows: Joint Probability: P(A and B) = P(A) \* P(B)

1. What is chain rule of probability?

The chain rule, or general product rule, calculates any component of the joint distribution of a set of random variables using only conditional probabilities. This probability theory is used as a foundation for backpropagation and in creating Bayesian networks.

1. What is conditional probability means? What is the formula of it?

Conditional probability is defined as the likelihood of an event or outcome occurring, based on the occurrence of a previous event or outcome. Conditional probability is calculated by multiplying the probability of the preceding event by the updated probability of the succeeding, or conditional, event.

P(A | B) = P(A∩B) / P(B)

1. What are continuous random variables?

A continuous random variable is one which takes an infinite number of possible values. Continuous random variables are usually measurements. Examples include height, weight, the amount of sugar in an orange, the time required to run a mile.

1. What are Bernoulli distributions? What is the formula of it?

A Bernoulli distribution is a discrete probability distribution for a Bernoulli trial — a random experiment that has only two outcomes (usually called a “Success” or a “Failure”).

A random experiment whose outcomes are only of two types, say success S and failure F, is a Bernoulli trial. The probability of success is taken as p while that of failure is q = 1 − p.

1. What is binomial distribution? What is the formula?

The trails must be a fixed number. The outcome of each trial must be independent of each other. And the success of probability must remain the same for each trail.

P(x) = [n!/r!(n−r)!]· pr (1 − p)n−r

1. What is Poisson distribution? What is the formula?

In Poisson distribution, the mean of the distribution is represented by λ and e is constant, which is approximately equal to 2.71828. Then, the Poisson probability is: P(x, λ ) =(e– λ λx)/x! In Poisson distribution, the mean is represented as E(X) = λ.

1. Define covariance.

Covariance is a measure of how much two random variables vary together. It's similar to variance, but where variance tells you how a single variable varies, co variance tells you how two variables vary together.

1. Define correlation

Correlation is a statistical tool which studies the relationship between two variables e.g. change in price leads to change in quantity demanded. Correlation studies and measures the direction and intensity of relationship among variables.

1. Define sampling with replacement. Give example.

Sampling is called with replacement when a unit selected at random from the population is returned to the population and then a second element is selected at random. Whenever a unit is selected, the population contains all the same units, so a unit may be selected more than once.

1. What is sampling without replacement? Give example.

In sampling without replacement, each sample unit of the population has only one chance to be selected in the sample. For example, if one draws a simple random sample such that no unit occurs more than one time in the sample, the sample is drawn without replacement.

1. What is hypothesis? Give example.

A hypothesis is an assumption, an idea that is proposed for the sake of argument so that it can be tested to see if it might be true. In the scientific method, the hypothesis is constructed before any applicable research has been done, apart from a basic background review.

An example of a model that approximates the target function and performs mappings of inputs to outputs is called a hypothesis in machine learning. For example, the training dataset is used to learn a hypothesis and the test dataset is used to evaluate it.