1. Define the Bayesian interpretation of probability.

**Ans: Bayesian statistics mostly involves conditional probability, which is the probability of an event A given event B, and it can be calculates using the Bayes rule.**

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

**Ans: The probability of the union of two events E and F (written E U F ) equals the sum of the probability of E and the probability of F minus the probability of E and F occurring together.**

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

**Ans: Joint probability is simply the likelihood that two events will happen at the same time. It’s the probability that event X occurs at the same time as event Y.**

**Formula : P(X,Y) = P(X)\*P(Y)**

1. What is chain rule of probability?

**Ans: The probability chain is a random process in which someone transmits the information to others in accordance with the laws of probability and then these others pass the information in a similar way.**

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

**Ans: 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 preceding event by the updated probability of the succeeding, or conditional, event.**

**P(A) = n(A)/n(S)**

1. What are continuous random variables?

**Ans: A continuous random variables are which takes an infinite number of possible values. Continuous random variables are usually measurements.**

**Ex – height, weight, the amount of sugar in an orange**.

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

**Ans: Bernouli distribution is a discrete probability distribution where the Bernoulli random variable can have only 0 or 1 as the outcome. P is the probability od success and 1 –p is the probability of failure. The expected value for a random variable, X, for a Bernoulli distribution is : E[X] = p. for example, if p=04, then E[X] = 0.04**

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

**Ans: The binomial is a type of distribution that has two possible outcomes. For example, a coin toss has only two possible outcomes: heads or tails and taking a attest could have two possible outcomes: pass or fail . A binomial distribution shows either (S) success or Failure (F).**

**P(x:n,p) = nCx X px (1-p)n-x**

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

**Ans: P(x;u) = (e-u)(ux)/x!. A poisson distribution is a probability distribution that is used to show how many times an event is likely to occur over a specified period.**

1. Define covariance.

**Ans: Covariance measures the direction of the relationship between two variables. A positive covariance means the both variables tend to be high or low at the same time. A negative covariance means that when one variable is high, the other tends to be low.**

1. Define correlation

**Ans: 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.

**Ans: When we sample with replacement, the two sample values are independent. It means that what we get on the first one doesn’t affect what we get on the second.**

1. What is sampling without replacement? Give example.

**Ans: In sampling without replacement, each sample unit of the population has only once 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.

**Ans: A hypothesis is a proposed explaination for a phenomenon. Ex – someone might say , “I have a theory about why Jane won’t go out on a date Billy”.Since there is no data to support this explaination, this is actually a hypothesis.**