1. **Difference between inferential statistics and descriptive statistics?**

   Descriptive Statistics

   Concerned with the describing the target population.
   Organizing, analyzing and present the data in a meaningful manner.
   The final results are shown in the form of charts, tables and Graphs.
   Describes the data which is already known.
   Tools-Measures of Central Tendency (mean/median/mode), Spread of Data(range,standard deviation etc)

   Inferential Statistics

   Makes inferences from the sample and generalizes them to the population
   Compares, Test and predicts future outcomes.
   Final result in the probability that is beyond the data available.
   Tries to make conclusions about the population that is beyoud the data available.
   Tools- Hypothesis tests, Analysis of variance etc.

2. **Differentiate between Population and Sample?**

   Population

   The measurable quality is called a parameter.
   The population is a complete set
   Reports are true representation of opinion.
   It contains all members of a specified group.

   Sample

   The measurable quality is called a statistic.
   The sample is a subset of the population.
   Reports have a margin of error and confidence interval.
   It is a subset that represents the entire population.

3. **What is hypothesis? Differentiate between null and alternative hypothesis?**

   Hypothesis is the statistical assumption about the population parameter.The hypothesis is the tentative relationship between two or more variables which direct the research activity to test it.Ahypothesis is a testable prediction which is expected to occur.It can be true or false based on the underlying information in the data provided for the testing.

   Null Hypothesis: A statement about a population parameter.
   We test the likelihood of this statement being true in order to decide whether to accept or reject our alternative hypothesis.
   Denoted by Ho.

   Alternative Hypothesis:A statement that directly contradicts the null hypothesis.
   We determine whether or not to accept or reject this statement based on the likelihood of the null hypothesis being true.
   Denoted by Ha.

4. **What is the central Limit theorem?**

   Central limit theorem is a statistical theory which states that when the large sample size has a finite variance, the samples will be normally distributed and the mean of samples will be approximately equal to the mean of the whole population.

5. **Differentiate between Type I and Type II errors?**

   Type I

   The chance or probability that you will reject a null hypothesis that should not have been rejected.
   This will result in deciding two groups are different or two variables are related when they really are not.
   The probability of a Type I error is called Alpha.

   Type II

   The chance or probability that you will not reject a null hypothesis when it should have been rejected.
   It will result in you deciding two groups are not different or two variables are not related when they really are.
   Type two error is beta.

6. What is linear regression?

Linear regression analysis is used to predict the value of a variable based on the value of another variable. The variable you want to predict is called the dependent variable. The variable you are using to predict the other variable's value is called the independent variable.

7. What are the assumptions required for linear regression?

Assumption 1: Linear Relationship.
Assumption 2: Independence.
Assumption 3: Homoscedasticity.
Assumption 4: Normality.