1. How are you going to figure out the average height of all the trees in Karnataka?

Ans: The average height of all the trees in Karnataka can be calculated by following steps:

* Take multiple samples from different region of Karnataka and find the mean of each sample.
* Apply the central limit theorem to find the mean of the population i.e., average height of all the trees in Karnataka.
* The mean of all the sample’s mean will be the average height of all the trees in Karnataka.

1. What is hypothesis testing and how does it work?

Ans: Hypothesis testing is a form of statistical inference that uses user data from a sample to draw conclusions about a population parameter or a population probability distribution function.  
First a tentative assumption is made about the parameter or distribution, called null hypothesis (H0). An alternate hypothesis (H1) which is opposite of what is stated in the null hypothesis is also defined. Further, statistical tests are being conducted on the data for a particular confidence interval and the outcome will define whether H0 or H1 will be accepted.

1. Explain the differences between alpha & beta errors. Which inaccuracy is the most hazardous?

Ans: In hypothesis testing, alpha error (or type I error) is the mistaken rejection of the true null hypothesis. While a beta error (or type II error) is the failure to reject the null hypothesis that is actually false. Many statistical theories revolve around minimizing of one or both errors, though the complete elimination is impossible. Therefore, a type 1 error is equivalent to false positive and type 2 error is equivalent to false negative.  
The beta inaccuracy is more hazardous. For e.g., during the RT-PCR testing of COVID-19, if a patient is detected with alpha inaccuracy or false positive then the consequences will not be that severe. But on the other hand, if a patient is detected as false negative then it is hazardous as it can communicate the disease to other too.

1. What is the significance of P value?

Ans: In statistics, the p-value is the probability that the null hypothesis is true, and (1-p) is the probability that the alternate hypothesis is true. P-value is often used to promote credibility for studies or reports by government agencies. For example, the United States Census Bureau stipulates any analysis with a p-value greater than 0.10 must be accompanied by a statement that the difference is not statistically different from zero.

1. What is the Probability Distribution Function and how does it work?

Ans: Probability Distribution is a statistical function that describes all the possible values and likelihoods that a random variable can take within a given range. For instance, if X is used to denote the outcome of a coin toss ("the experiment"), then the probability distribution of X would take the value 0.5 (1 in 2 or 1/2) for X = heads, and 0.5 for X = tails (assuming that the coin is fair).