Q 1. What is a Decision tree in Machine Learning with example?  
Ans- A decision tree is a flowchart-like structure in which each internal node represents a test on a feature (e.g. whether a coin flip comes up heads or tails) , each leaf node represents a class label (decision taken after computing all features) and branches represent conjunctions of features that lead to those class.  
  
Q 2. Why Decision tree is used in Machine Learning?  
Ans- The goal of using a Decision Tree is to create a training model that can use to predict the class or value of the target variable by learning simple decision rules inferred from prior data(training data). In Decision Trees, for predicting a class label for the record we start from the root of the tree.  
  
Q 3. What is entropy in a decision tree?  
Ans- Entropy=> A decision tree is built top-down from a root node and involves partitioning the data into subsets that contain instances with similar values (homogenous). ID3 algorithm uses entropy to calculate the homogeneity of a sample.

4. The information gain is based on the decrease in entropy after a data-set is split on an attribute. An information gain is the difference of error in the root node and in the leaf node.  
Information Gain = Entropy before splitting - Entropy after splitting  
Gini index computes the degree of probability of a specific variable that is wrongly being classified when chosen randomly and a variation of the Gini coefficient.