1. To embark on, R squared is a statistical measure that shows the proportion of the difference for a dependent variable that’s explained by an independent variable in a regression model.While,RSS mesasures the variance between the observed values of the dependent variable and the predicted values by the model.Moreover,it illustrates the sum of squared differences between the actual and predicted values of the dependent variable.Overall,it can be said that R squared is consider a better measure method compare the RSS because it provides an overall meausure pf the proportion of variance in the dependent variable that is explained by the model on the opposite side RSS only measures the capacity of the residuals.Furthermore,R squared is the standard measure and ranges from 0 to 1 which is the best fit for different model in regression.On the other hand,RSS value depends on the scale of the dependent variable and very difficult to understand across the models.
2. TSS finds the squared difference between each variable and the mean.2.)RSS is a statistical method that helps identify the level of difference in a dataset not predicted by regression model .Moreover, it measures the variance in the value of observed data when compared its predicted value as per the regression model.3)The explained sum of squares is the sum of the squares of the deviations of the predicted values from the mean value of a response variable,in a standard regression model.The equation of three metrics with each othes as below.
3. Regularization is set methods for reducing overlifting in machine learning models.In addition,it is technique used to reduce errors by fitting the function appropriately on the given training set and avoiding overfiting.
4. Gini index is a powerful measure of the randomness or the impurity in the value of dataset.Gini index helps to decrease the impurities from the root nodes to the leaf nodes of a decision tree model.

Ans.no6 : ensemble methods are techniques that create multiple models and then combine them to produce improved results.Moreover,ensemble methods in machine learning usually produce more accurate solutuions than a single model.

Ans,no8 : Out of bag errors are an estimate of the performance of a random forest classifier.The OOB error is computed using the samples that were not included in the training of the individual trees.The OOB error can be useful for evaluating the performance of the random forests.it is not always a reliable estimate how the model is working well.

Ans.no9 : K fold cross validation is a technique used to predict the skill of the model of on new data.There are commonly used on cross validation in repeated that are available in scikit learn.

Ans.NO10: The hyperparameter tuning is a configuration variables that control the learning process

Of a machine learning model such as the learning rate of choice of a optimizer.The goal of hyperparameter tuning is to find the values that lead to the best performance on a given task.

Ans no11 If we have large learning rate in gradient descent it can overshoot the minimum.it may fail to converge.So,we have to get medium learning rate and it is good deal if we get small learning the gradient can be slow.

Ans no14 The bias variance is trade off is a fundamental concept affecting performance of any predictive model.It shows the delicate balance between bias error and variance error of a model.In common,a more complex will have a lower bias but higher variance,while a simple model will have a higher bias but lower variance.

Ans no7 Bagging is machine learning meta algotihm improve the stability and accuracy of algorithms used in statistical classification and regression.it decrease the difference and avoid overfiting.it is usually applied to decision tree methods.On the other hand,boosting technique attempts to build strong classifier.it is done by building model using a weak models in series.