MACHINE LEARNING ASSIGNMENT

(1) A) Least Square Error
(2) A) Linear regression is sensitive to outliers
(3) B) Negative
(4) B) Correlation
(5) C) Low bias and high variance
(6) A) Descriptive model
(7) D) Regularization
(8) D) SMOTE
(9) A) TPR and FPR
(10) B) False
(11) B) Apply PCA to project high dimensional data
(12) A) We don't have to choose the learning rate & B) It becomes slow when number of features is very large.
(13) Explain the term regularization?
    a. Ans:- Some times our ML Model fails to get train with the given Data Points, so either unable to read any Data Points (i.e. Underfitting) or reads each and every Data Points irrespective of the Noise and Outlier Data (i.e. Overfitting), which results as the wrong Predictions of the Test Data and deviations of the Bias and Variance from the actual Target Data. So to overcome of this and to properly fit our ML Model onto our Test Data we use Regularization term and its methods.
(14) Which particular algorithms are used for regularization?
    a. Ans: There are 3 Types of Regularization Algorithms as below:-
        i. LASSO:- This Algorithm omits the Attributes which it thinks not much contributable for the Output, by Reducing the Co-efficient Values of such Attributes up to 0 (Zero). But with keeping the contributable Attributes for better Predictions.
        ii. Ridge:- This Algorithm Reduces the differences of the Co-efficient values between the Attributes without omitting the same for better predictions.
        iii. ElasticNet:- This Algorithm is the combination of LASSO and Ridge Regressions, i.e. it Reduces the co-efficient values between the Attributes, as well as Omits also the very non contributable Attributes for the Output as this Algorithms thinks.
(15) The Error term in linear regression shows the difference between the Predicted Targets and Actual Observed Targets. So it reflects the nonlinearities, measurement errors & unpredictable effects etc. This may be measured by Mean Squared Error, Root Mean Squared Error, Mean Absolute Error and R Square.