Question 1 to 11 Answer

1. Least Square Error
2. Linear regression is sensitive to outliers
3. Positive
4. None of these
5. None of these
6. Predictive model
7. Regularization
8. SMOTE
9. Sensitivity and Specificity
10. True
11. Apply PCA to project high dimensional data
12. It does not make use of dependent variable

Q13 to Q15 are subjective answer type questions ,Answer them briefly

Answer 13.

Regularization:
When we use regression models to train some data, there is a good chance that the model will overfit the given training data set. Regularization helps sort this overfitting problems by restricting the degree of freedom of a given equation i.e. simply reducing the number of degrees on a polynomial function by reducing their corresponding weights.
In a liner equation, we do not want huge weights/coefficients as a small change in weight can make a large difference for the dependent variable(y). So, regularization constraints the weights of such features to avoid overfitting.

It's different types of regularization in regression:

- LASSO
- RIDGE
- ELASTICNET (Less popular)

LASSO (Least Absolute Shrinkage and Selection Operator) Regression (L1 Form)
LASSO regression penalizes the model based on the sum of magnitude of the coefficients. The regularization term is given by
regularization = $\lambda * \sum |\beta_j|$

Where, λ is the shrinkage factor

RIDGE REGRESSION (L2 FORM)

Ridge regression penalizes the model based on the sum of squares of magnitude of the coefficients. The regularization term is given by regularization = $\lambda * \sum |\beta_j^2|$

Where, λ is the shrinkage factor.

ANSWER 14. LASSO (Least Absolute Shrinkage and Selection Operator) Regression, Ridge Regression and Elastic net Regression algorithms are used for regularization.

ANSWER 15.

Liner Regression is on of the most fundamental algorithm in the entire machine learning. It is one of the supervised machine learning models and can be used to solve regression problems.

Building blocks of a liner Regression model are:

- Discreet /continuous independent variables
- A best fit regression line.
- Continuo dependent variable.
  A liner Regression model predicts the dependent variable using a regression line based on the independent variables.

  The equation of the liner Regression is:
  Y=a+b*x+e
  Where, a is the intercept, b is the slope of the line, and e is the error term.
  The equation above is used to predict the value of the target variable based on the given predictor variable (s).