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. B) Predictive 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. C) We need to iterate.
13. In machine learning, regularization refers to a set of techniques used to prevent overfitting, which is a common problem in complex models that can lead to poor performance on new, unseen data. Regularization helps to reduce the complexity of a model and prevent overfitting by adding a penalty term to the loss function during training.
14. Some examples of regularization techniques used in different algorithms:
    1. Linear Regression: Ridge Regression, Lasso Regression, and Elastic Net Regression.
    2. Logistic Regression: L1 regularization, L2 regularization, and Elastic Net regularization.
    3. Support Vector Machines: L1 regularization, L2 regularization, and Support Vector Regression with L1 or L2 regularization.
    4. Decision Trees: Pruning, which involves removing some of the nodes and branches from the tree to reduce its complexity.
    5. Neural Networks: Dropout regularization, which randomly drops out some of the neurons in a layer during training, and L1 and L2 regularization, which penalize the size of the weights in the network.
15. In linear regression, the term "error" refers to the difference between the predicted value of the dependent variable and its actual value. Linear regression aims to model the relationship between a dependent variable (usually denoted as "y") and one or more independent variables (usually denoted as "x"). The equation for a simple linear regression model with one independent variable can be written as: