1. Which type of machine learning is used when the output variable is continuous?  
    a) Classification  
    b) Clustering  
    c) Regression  
    d) Reinforcement Learning
2. In which scenario would you use classification instead of regression?  
    a) Predicting house prices based on area  
    b) Predicting whether an email is spam or not  
    c) Predicting the temperature of a city  
    d) Predicting the total sales of a store
3. Which of the following is an unsupervised learning algorithm?  
    a) Decision Tree  
    b) K-Means  
    c) Linear Regression  
    d) Logistic Regression
4. What does the term "overfitting" refer to in machine learning?  
    a) When the model does not learn from the data  
    b) When the model fits the training data too well but fails on new data  
    c) When the model generalizes well to unseen data  
    d) When the model cannot capture complex patterns
5. Which evaluation metric is most commonly used for classification problems?  
    a) Mean Squared Error (MSE)  
    b) R-squared  
    c) Accuracy  
    d) Root Mean Squared Error (RMSE)
6. What is the main assumption of linear regression?  
    a) The relationship between dependent and independent variables is linear  
    b) The data is always normally distributed  
    c) There is no correlation between independent variables  
    d) It can only be used for categorical data
7. Which clustering algorithm is best for detecting outliers?  
    a) K-Means  
    b) DBSCAN  
    c) Hierarchical Clustering d) Linear Regression
8. Which regularization technique adds both L1 and L2 penalties to a regression model?  
    a) Ridge Regression  
    b) Lasso Regression  
    c) Elastic Net  
    d) Polynomial Regression
9. What is the purpose of the kernel trick in Support Vector Machines (SVM)?  
    a) To reduce training time  
    b) To map data into a higher-dimensional space for better classification  
    c) To normalize data  
    d) To make the model interpret results more easily
10. Which clustering algorithm does not require specifying the number of clusters in advance?  
     a) K-Means  
     b) DBSCAN  
     c) KNN  
     d) Decision Tree
11. What type of function does logistic regression use to convert values into probabilities?  
     a) Linear function  
     b) Sigmoid function  
     c) Exponential function  
     d) Softmax function
12. Which metric is commonly used to evaluate a clustering algorithm?  
     a) F1-score  
     b) Sum of Squared Errors (SSE)  
     c) Mean Squared Error  
     d) Log-Loss
13. If your classification model has a high recall but low precision, what does it mean?  
     a) The model is predicting too many false positives  
     b) The model is predicting too many false negatives  
     c) The model has low accuracy  
     d) The model is not generalizing well
14. Which technique can be used to reduce the dimensionality of a dataset before applying clustering?  
     a) Support Vector Machine  
     b) Principal Component Analysis (PCA)  
     c) Logistic Regression  
     d) Random Forest
15. What is the main limitation of the K-Means clustering algorithm?  
     a) It does not scale well for large datasets  
     b) It requires the number of clusters to be specified in advance  
     c) It cannot handle numerical data  
     d) It always produces overlapping clusters