**1. What is the primary characteristic of supervised learning?**

* A) The model learns from data without labels.
* B) The model learns from labeled data.
* C) The model adjusts itself based on rewards and penalties.
* D) The model learns by observing human behavior.
* **Correct Answer:** B) The model learns from labeled data.

**2. Which of the following is NOT a supervised learning algorithm?**

* A) Decision Trees
* B) K-Means Clustering
* C) Logistic Regression
* D) Support Vector Machines
* **Correct Answer:** B) K-Means Clustering

**3. In a classification problem, which algorithm is best suited for binary outcomes?**

* A) Linear Regression
* B) Logistic Regression
* C) K-Nearest Neighbors
* D) Random Forest
* **Correct Answer:** B) Logistic Regression

**4. Which technique helps to avoid overfitting in machine learning models?**

* A) Increasing the model complexity
* B) Using a larger dataset
* C) Reducing the number of training epochs
* D) Ignoring noise in the data
* **Correct Answer:** B) Using a larger dataset

**5. What is overfitting in the context of machine learning?**

* A) When a model is too simple to capture the underlying pattern in data.
* B) When a model performs well on both training and test data.
* C) When a model learns the training data too well, including noise, leading to poor generalization.
* D) When a model underestimates the complexity of the data.
* **Correct Answer:** C) When a model learns the training data too well, including noise, leading to poor generalization.

**6. Which algorithm is most likely to be used for predicting a continuous variable, such as house prices?**

* A) Logistic Regression
* B) Decision Trees
* C) Support Vector Machines
* D) Linear Regression
* **Correct Answer:** D) Linear Regression

**7. What is the purpose of using regularization techniques like Ridge or Lasso in regression?**

* A) To increase the complexity of the model.
* B) To penalize large coefficients and prevent overfitting.
* C) To add more features to the model.
* D) To improve the accuracy on the training dataset.
* **Correct Answer:** B) To penalize large coefficients and prevent overfitting.

**8. Which of the following statements best describes underfitting?**

* A) The model performs exceptionally well on the training data but poorly on the test data.
* B) The model fails to capture the underlying trend in the data and performs poorly on both training and test data.
* C) The model uses too many features leading to a complex model.
* D) The model is fine-tuned to generalize well across unseen data.
* **Correct Answer:** B) The model fails to capture the underlying trend in the data and performs poorly on both training and test data.

**9. Which supervised learning algorithm is suitable for multi-class classification problems?**

* A) Linear Regression
* B) Logistic Regression with One-vs-Rest (OvR)
* C) Ridge Regression
* D) K-Means Clustering
* **Correct Answer:** B) Logistic Regression with One-vs-Rest (OvR)

**10. What does a support vector machine (SVM) aim to find in classification tasks?**

* A) The most complex decision boundary
* B) The simplest decision boundary
* C) The hyperplane that best separates the classes
* D) The decision tree with the maximum depth
* **Correct Answer:** C) The hyperplane that best separates the classes