MACHINE LEARNING

Question 1 Answer : Option A

Question 2 Answer : Option A

Question 3 Answer : Option B

Question 4 Answer : Option C

Question 5 Answer : Option C

Question 6 Answer : Option D

Question 7 Answer : Option D

Question 8 Answer : Option D

Question 9 Answer : Option A

Question 10 Answer : Option B

Question 11 Answer : Option A

Question 12 Answer : Option B

Question 13 Answer:

Regularization is a set of methods for reducing overfitting in machine learning models. Typically, regularization trades a marginal decrease in training accuracy for an increase in generalizability. Regularization encompasses a range of techniques to correct for overfitting in machine learning models. There are two common types in regularization i.e. ‘

L1 regularization (Lasso)

L2 regularization (Ridge).

L1 regularization adds absolutely the values of the weights to the objective characteristic, encouraging sparsity in the model, that means a few weights emerge as precisely zero. L2 regularization adds the squared values of the weights, which has a tendency to spread the effect of every function extra lightly throughout all capabilities. By controlling the complexity of the model through regularization, it enables acquire better overall performance on new statistics and complements the version's potential to generalize beyond the training set.

Question 14 Answer:

Regularization techniques can be applied to various machine learning algorithms to prevent overfitting. Some commonly used algorithms with built-in regularization include:

Linear Regression:

- Lasso Regression (L1 regularization): It adds the absolute values of the coefficients as a penalty term.
- Ridge Regression (L2 regularization): It adds the squared values of the coefficients as a penalty term.

Logistic Regression: Similar to linear regression, logistic regression can also use L1 or L2 regularization to prevent overfitting.

Support Vector Machines (SVM): SVM can use regularization through the choice of the regularization parameter (C), which controls the trade-off between achieving a low training error and a low testing error.

Neural Networks: Neural networks can benefit from regularization techniques like dropout, which randomly drops out some neurons during training to prevent over-reliance on specific features.

Decision Trees: Pruning is a form of regularization for decision trees. It involves removing branches that do not provide much predictive power, helping to simplify the tree and prevent overfitting. Elastic Net:

Elastic Net is a combination of L1 and L2 regularization, combining both penalty terms to provide a balanced approach.

Question 15 Answer:

Linear regression most often uses mean-square error (MSE) to calculate the error of the model. MSE is calculated by measuring the distance of the observed y-values from the predicted y-values at each value of x, squaring each of these distances calculating the mean of each of the squared distances.