# UNIT-II

**Fill in the Blanks**

1. A Multi-layer Perceptron consists of an input layer, hidden layer, and _____ layer.
   **Answer:** Output
2. The process of sending inputs through the network is called _____ propagation.
   **Answer:** Forward
3. Backpropagation is used to minimize the _____ in neural networks.
   **Answer:** Error
4. In MLP, weights are updated during the _____ pass.
   **Answer:** Backward
5. The activation function introduces _____ into the neural network.
   **Answer:** Nonlinearity
6. The Backpropagation algorithm uses the _____ descent optimization technique.
   **Answer:** Gradient
7. Radial Basis Function networks use _____ functions as activation functions.
   **Answer:** Radial
8. The hidden neurons in an RBF network measure the _____ from the center point.
   **Answer:** Distance
9. The curse of dimensionality occurs when the number of dimensions becomes very _____.
   **Answer:** Large
10. Support Vector Machines are mainly used for _____ problems.
    **Answer:** Classification
11. In backpropagation, the error is propagated from the output layer to the _____ layer.
    **Answer:** Input
12. The sigmoid function outputs values between _____ and 1.
    **Answer:** 0
13. An MLP can solve _____ separable problems.
    **Answer:** Nonlinearly
14. Basis functions are used in RBF networks for _____ approximation.
    **Answer:** Function
15. The learning rate controls the size of the weight _____.
    **Answer:** Updates
16. Support vectors are the data points closest to the _____ boundary.
    **Answer:** Decision
17. Splines are used for smooth curve _____.
    **Answer:** Fitting
18. During training, MLP adjusts its _____ values iteratively.
    **Answer:** Weight
19. The output of a neuron depends on inputs and associated _____.
    **Answer:** Weights
20. The main objective of backpropagation is to reduce prediction _____.
    **Answer:** Error

**Multiple Choice Questions (MCQs)**

1. What does MLP stand for?
   a) Multiple Linear Processing
   b) Multi-layer Perceptron
   c) Machine Learning Process
   d) Multi-level Program
   **Answer:** b) Multi-layer Perceptron
2. Which algorithm is commonly used to train MLPs?
   a) K-Means
   b) Apriori
   c) Backpropagation
   d) PCA
   **Answer:** c) Backpropagation
3. In neural networks, forward propagation calculates the:
   a) Error values
   b) Weight updates
   c) Output values
   d) Hidden nodes
   **Answer:** c) Output values
4. Backpropagation works by propagating the error in which direction?
   a) Input to output
   b) Output to input
   c) Left to right
   d) Randomly
   **Answer:** b) Output to input
5. Which function is commonly used in hidden layers?
   a) Sorting function
   b) Activation function
   c) Compression function
   d) Search function
   **Answer:** b) Activation function
6. RBF stands for:
   a) Random Basis Function
   b) Radial Basis Function
   c) Recursive Binary Function
   d) Regression Basis Formula
   **Answer:** b) Radial Basis Function
7. The curse of dimensionality refers to problems caused by:
   a) Low memory
   b) Large datasets
   c) High-dimensional data
   d) Slow processors
   **Answer:** c) High-dimensional data
8. Which of the following is mainly used for classification?
   a) Support Vector Machine
   b) Bubble Sort
   c) Linear Search
   d) Stack
   **Answer:** a) Support Vector Machine

9. In MLP, hidden layers help in learning:
   a) Linear relationships only
   b) Nonlinear relationships
   c) Sorting techniques
   d) Memory allocation
   **Answer:** b) Nonlinear relationships
10. Which optimization method is used in backpropagation?
   a) Breadth First Search
   b) Gradient Descent
   c) Binary Search
   d) Dynamic Programming
   **Answer:** b) Gradient Descent
11. Which activation function outputs values between 0 and 1?
   a) ReLU
   b) Sigmoid
   c) Step Function
   d) Identity Function
   **Answer:** b) Sigmoid
12. The neurons in an RBF network compute:
   a) Probabilities
   b) Distances
   c) Graphs
   d) Trees
   **Answer:** b) Distances
13. Splines are mainly used for:
   a) Data encryption
   b) Curve fitting
   c) Sorting
   d) Classification only
   **Answer:** b) Curve fitting
14. Which layer receives external input data in an MLP?
   a) Hidden layer
   b) Output layer
   c) Input layer
   d) Activation layer
   **Answer:** c) Input layer
15. Support vectors are located:
   a) Far from the boundary
   b) Near the decision boundary
   c) At the center of data
   d) Randomly
   **Answer:** b) Near the decision boundary
16. Which network uses radial basis functions?
   a) CNN
   b) RBF Network
   c) Decision Tree
   d) Bayesian Network
   **Answer:** b) RBF Network
17. What is the primary goal of training a neural network?
   a) Increase memory

b) Minimize error
c) Reduce dimensions only
d) Store data
**Answer:** b) Minimize error

18. Which problem can a single-layer perceptron NOT solve?
a) Linear classification
b) XOR problem
c) Binary classification
d) Simple prediction
**Answer:** b) XOR problem

19. In backpropagation, weights are adjusted based on the:
a) Input size
b) Error gradient
c) Output color
d) Number of layers
**Answer:** b) Error gradient

20. Support Vector Machines attempt to maximize the:
a) Margin
b) Error
c) Dimensions
d) Layers
**Answer:** a) Margin