Unit-1

Fill in the Blanks (Machine Learning)

1. _____ learning uses labeled training data.
   Answer: Supervised
2. The basic processing unit of the human brain is called a _____.
   Answer: Neuron
3. A machine learning system improves its performance through _____.
   Answer: Experience
4. In concept learning, hypotheses are organized in a _____ space.
   Answer: Version
5. The Candidate Elimination Algorithm maintains the _____ and general boundaries.
   Answer: Specific
6. The Perceptron algorithm is used for _____ classification.
   Answer: Linear
7. A dataset that can be separated by a straight line is called _____ separable.
   Answer: Linearly
8. _____ regression predicts continuous values.
   Answer: Linear
9. In supervised learning, the desired output is also called the _____.
   Answer: Label
10. The search for hypotheses in concept learning is guided by training _____.
    Answer: Examples
11. A maximally specific hypothesis is the _____ restrictive hypothesis.
    Answer: Most
12. The brain consists of billions of interconnected _____.
    Answer: Neurons
13. A learning system should be able to _____ from experience.
    Answer: Generalize
14. The Perceptron learning rule adjusts the _____ values.
    Answer: Weight
15. In machine learning, overfitting occurs when a model learns the _____ too closely.
    Answer: Training data
16. The Candidate Elimination Algorithm searches through the _____ space.
    Answer: Hypothesis
17. A hypothesis consistent with all training examples belongs to the _____ space.
    Answer: Version
18. Linear discriminants divide the input space using a _____ boundary.
    Answer: Linear
19. In linear regression, the relationship between variables is represented using a _____.
    Answer: Equation
20. Machine learning systems are designed to improve _____ automatically.
    Answer: Performance

Multiple Choice Questions (MCQs)

1. Which type of learning uses labeled data?
   a) Unsupervised Learning
   b) Reinforcement Learning
   c) Supervised Learning
   d) Semi-supervised Learning
   Answer: c) Supervised Learning
2. The basic unit of an artificial neural network is inspired by the:
   a) CPU
   b) Neuron
   c) Memory Cell
   d) Sensor
   Answer: b) Neuron
3. Which algorithm maintains S and G boundaries?
   a) ID3
   b) K-Means
   c) Candidate Elimination
   d) Naive Bayes
   Answer: c) Candidate Elimination
4. Concept learning is mainly viewed as a:
   a) Clustering process
   b) Search process
   c) Sorting process
   d) Storage process
   Answer: b) Search process
5. The Perceptron is mainly used for:
   a) Clustering
   b) Regression
   c) Linear Classification
   d) Reinforcement
   Answer: c) Linear Classification
6. Which of the following predicts continuous outputs?
   a) Linear Regression
   b) Decision Tree
   c) Perceptron
   d) KNN
   Answer: a) Linear Regression
7. A linearly separable problem can be solved using:
   a) Perceptron
   b) K-Means
   c) Apriori
   d) PCA
   Answer: a) Perceptron
8. In machine learning, experience is usually represented by:
   a) Programs
   b) Data
   c) Hardware
   d) Sensors
   Answer: b) Data

9. Which boundary contains the most specific hypotheses?
   a) General Boundary
   b) Specific Boundary
   c) Decision Boundary
   d) Linear Boundary
   Answer: b) Specific Boundary
10. The hypothesis space contains:
   a) All possible hypotheses
   b) Only correct hypotheses
   c) Only specific hypotheses
   d) Only general hypotheses
   Answer: a) All possible hypotheses
11. Which learning type does NOT require labeled data?
   a) Supervised Learning
   b) Reinforcement Learning
   c) Unsupervised Learning
   d) Concept Learning
   Answer: c) Unsupervised Learning
12. The human brain contains approximately billions of:
   a) Sensors
   b) Chips
   c) Neurons
   d) Processors
   Answer: c) Neurons
13. Which algorithm updates weights iteratively?
   a) Perceptron
   b) KNN
   c) Apriori
   d) PCA
   Answer: a) Perceptron
14. In concept learning, positive examples are used to:
   a) Specialize hypotheses
   b) Generalize hypotheses
   c) Remove all hypotheses
   d) None of these
   Answer: b) Generalize hypotheses
15. Linear regression attempts to fit a:
   a) Circle
   b) Curve
   c) Straight line
   d) Tree
   Answer: c) Straight line
16. Which of the following is a supervised learning algorithm?
   a) K-Means
   b) Perceptron
   c) PCA
   d) Apriori
   Answer: b) Perceptron
17. Overfitting occurs when a model performs well on:
   a) Test data only

b) New data only
c) Training data only
d) None of these
Answer: c) Training data only

18. Candidate Elimination Algorithm is related to:
a) Reinforcement Learning
b) Concept Learning
c) Clustering
d) Optimization
Answer: b) Concept Learning

19. Which of the following is a linear discriminant?
a) Perceptron
b) K-Means
c) DBSCAN
d) Random Forest
Answer: a) Perceptron

20. The main objective of machine learning is to enable systems to:
a) Store data
b) Learn from data
c) Increase hardware speed
d) Reduce memory only