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AN AUTONOMOUS INSTITUTION



Approved by AICTE, New Delhi & Affiliated to Anna University, Chennai
DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE
PUZZLE QUESTION
DEEP LEARNING

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TOPIC: UNIT 1-INTRODUCTION

1. What is the primary goal of machine learning?

- a) Manually programming solutions
 - b) Enabling systems to learn patterns from data
 - c) Creating static rule-based systems
 - d) Designing hardware-specific algorithms
- Answer:** b) Enabling systems to learn patterns from data

2. Which of the following is an example of supervised learning?

- a) Clustering customer groups based on behavior
 - b) Predicting house prices using historical data
 - c) Anomaly detection in network security
 - d) Generating new data samples from a model
- Answer:** b) Predicting house prices using historical data

3. What does an SVM aim to do with data points from two classes?

- a) Minimize intra-class variance
 - b) Find a hyperplane that maximizes the margin between classes
 - c) Assign weights to features for regression
 - d) Create centroids for each class
- Answer:** b) Find a hyperplane that maximizes the margin between classes

4. Which activation function is primarily used in logistic regression?

- a) Step function
 - b) Tanh function
 - c) Sigmoid function
 - d) ReLU function
- Answer:** c) Sigmoid function

5. What is the main limitation of a perceptron?

- a) It does not require a learning rate.
 - b) It can only solve linearly separable problems.
 - c) It can solve non-linear problems without modification.
 - d) It is designed only for multi-class classification.
- Answer:** b) It can only solve linearly separable problems.

6. **What does a shallow neural network typically contain?**

- a) Many hidden layers with large neuron counts
- b) One or two hidden layers with limited neurons
- c) Recurrent connections in layers
- d) Randomly initialized weight matrices

Answer: b) One or two hidden layers with limited neurons

7. **What is the function of an activation function in neural networks?**

- a) To control the model's learning rate
- b) To introduce non-linearity in the network
- c) To normalize the output of a neuron
- d) To simplify the optimization process

Answer: b) To introduce non-linearity in the network

8. **What is the purpose of backpropagation?**

- a) To initialize network weights
- b) To propagate outputs through the network
- c) To calculate gradients to update weights
- d) To implement activation functions

Answer: c) To calculate gradients to update weights

9. **What distinguishes stochastic gradient descent (SGD) from traditional gradient descent?**

- a) It uses the entire dataset in each iteration.
- b) It approximates gradients using a small random batch.
- c) It updates weights only at the end of training.
- d) It relies on momentum for convergence.

Answer: b) It approximates gradients using a small random batch.

10. **Why are neural networks considered universal approximators?**

- a) They can solve any optimization problem.
- b) They require minimal computational resources.
- c) They can model any continuous function with sufficient neurons and layers.
- d) They automatically adjust to data without tuning.

Answer: c) They can model any continuous function with sufficient neurons and layers.