

## **Deep Learning & AI – Question Bank (5 Marks Each)**

### **Section A: Basics of ML & DL**

1. Define Deep Learning. How is it different from Machine Learning? Give two examples.
2. Write a short note on applications of Deep Learning (any 3).
3. Compare ML vs DL in terms of data, performance, and computation needs.
4. Explain why Deep Learning requires large datasets and high computation power.
5. Differentiate between AI, ML, and DL with simple examples.

### **Section B: Core Concepts**

1. What is an Activation Function? Explain any two types with advantages and disadvantages.
2. What is a Loss Function? Explain different types for classification and regression problems.
3. What are Optimizers? Explain any two optimizers with pros and cons.
4. Explain the Vanishing Gradient Problem with a diagram.
5. Write a short note on Gradient Descent and its role in training DL models.

### **Section C: Artificial Neural Networks (ANN)**

1. Explain the working of an Artificial Neural Network (ANN) with a neat diagram.
2. What is Backpropagation? Explain its importance in training ANNs.
3. Explain the role of weights and biases in ANN with an example.

### **Section D: Convolutional Neural Networks (CNN)**

1. What is a Convolution operation? Explain with diagram.
2. Explain different types of Pooling Layers with diagram.
3. Explain the working of a CNN with a neat diagram.
4. What is the role of filters/kernels in CNN? Explain with an example.
5. Write a short note on Fully Connected Neural Networks.

### **Section E: Recurrent Neural Networks (RNN)**

1. Explain the working of an RNN with diagram.
2. Differentiate between RNN and CNN in terms of applications.
3. Explain the vanishing gradient problem in RNNs with respect to long sequences.