1. Describe the structure of an artificial neuron. How is it similar to a biological neuron? What are its main components?
2. What are the different types of activation functions popularly used? Explain each of them.
   1. Explain, in details, Rosenblatt’s perceptron model. How can a set of data be classified using a simple perceptron?
   2. Use a simple perceptron with weights *w*0, *w*1, and *w*2 as −1, 2, and 1, respectively, to classify data points (3, 4); (5, 2); (1, −3); (−8, −3); (−3, 0).
3. Explain the basic structure of a multi-layer perceptron. Explain how it can solve the XOR problem.
4. What is artificial neural network (ANN)? Explain some of the salient highlights in the different architectural options for ANN.
5. Explain the learning process of an ANN. Explain, with example, the challenge in assigning synaptic weights for the interconnection between neurons? How can this challenge be addressed?
6. Explain, in details, the backpropagation algorithm. What are the limitations of this algorithm?
7. Describe, in details, the process of adjusting the interconnection weights in a multi-layer neural network.
8. What are the steps in the backpropagation algorithm? Why a multi-layer neural network is required?
9. Write short notes on:
   * + 1. Artificial neuron
       2. Multi-layer perceptron
       3. Deep learning
       4. Learning rate
10. Write the difference between:-
    * + 1. Activation function vs threshold function
        2. Step function vs sigmoid function
        3. Single layer vs multi-layer perceptron