

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 6 – EXAMINATION – SUMMER 2026

Subject Code: 116AG01

Date: 12/06/2026

Subject Name: Deep Learning and Neural Network

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

- Q.1**
- (a) Explain the term : axon, cell body, synapse and dendrite **03**
 - (b) Explain the concept of perceptron with a neat diagram. **04**
 - (c) Explain different architectures of ANN with diagram. **07**
- Q.2**
- (a) Explain the concepts of overfitting and underfitting in neural network. **03**
 - (b) Compute the output of the following neural network model having (2, 2, 1) structure with linear activation function in the input layer and sigmoidal in the output layer, if the input vector is [1.2, 0.5], weight vectors are [0.04, 0.05; 0.2 0.02] and [0.06 0.15] respectively. **04**
 - (c) What is the role of activation functions in the context of neural network training? Explain any three activation function in details. **07**
- OR
- Q.2**
- (c) (i) Describe the concept of batch normalization. **07**
 - (ii) Explain the role of hyperparameter tuning in neural network.
- Q.3**
- (a) Define convolutional neural networks. Write the application of convolution operation. **03**
 - (b) How does pooling work? Explain with suitable example. **04**
 - (c) Draw and Explain architecture of CNN. **07**
- OR
- Q.3**
- (a) Explain Stride and padding. **03**
 - (b) Explain convolutional operation and its advantages. **04**
 - (c) Briefly explain the two major steps namely Feature learning and Classification of CNN. **07**
- Q.4**
- (a) Write advantages of recurrent neural network. **03**
 - (b) Explain types of RNN. **04**
 - (c) Draw and Explain architecture of RNN. **07**
- OR
- Q.4**
- (a) What is the advanced use of recurrent neural network? **03**
 - (b) Write the difference between CNN and RNN. **04**
 - (c) Explain LSTM with diagram. **07**
- Q.5**
- (a) Define Accuracy, Precision and Recall **03**

- (b) Explain TensorFlow Architecture. **04**
(c) What is tensorflow? Explain types of tensor in detail. **07**

OR

- Q.5** (a) Define Tensor, Rank of Tensor and shape of Tensor **03**
(b) Write steps to train RNN. **04**
(c) What are the limitation of TensorFlow? Explain eager execution and graph execution mode in TensorFlow. **07**
