

(Please write your Exam Roll No.)

Exam Roll No. 02617002023

END TERM EXAMINATION

SIXTH SEMESTER [BCA] MAY-JUNE- 2026

Paper Code: BCAT-314

Subject: Deep Learning with Python

Time: 3 Hours

Maximum Marks: 60

Note: Attempt all questions as directed. Internal Choice is indicated.

- Q1. Attempt **any Four** of the following questions: (4x5= 20)
- a) Explain the working of a perceptron with a neat diagram. What are its limitations?
 - b) Explain the process of training a neural network, including loss functions, hyper parameters and activation functions.
 - c) Differentiate between activation functions: Sigmoid, ReLU, and Tanh.
 - d) Explain the architecture and working of a Convolutional Neural Network (CNN).
 - e) What is back propagation? Explain its role in training neural networks.
 - f) Write short notes on Autoencoders and Dimensionality Reduction.
 - g) Explain the concept of Recurrent Neural Networks (RNNs) and their applications.
 - h) What is transfer learning? Explain its importance in deep learning.
- Q2. Explain the following in detail: (10)
- a) Gradient Descent
 - b) Stochastic Gradient Descent
 - c) Batch Normalization
 - d) Regularization techniques in deep learning
- OR**
- Q3. Explain the process of building an Artificial Neural Network (ANN) using Python/TensorFlow. Discuss the steps involved in data preprocessing, model creation, training, and evaluation. (10)
- Q4. Explain the architecture of CNN in detail. Discuss the role of Convolution layer, Pooling layer, Flattening, Fully connected layer and Softmax (10)
- OR**
- Q5. Explain in detail CNN architectures such as LeNet, AlexNet, Resnet and VGGNet. Draw architecture of each architecture. (10)
- Q6. Explain Deep Belief Networks and Autoencoders in detail. How are they useful for feature extraction and unsupervised learning? (10)
- OR**
- Q7. Discuss reinforcement learning in the context of deep learning. Explain agent, environment, reward, and policy with suitable examples. (10)
- Q8. Explain Recurrent Neural Networks (RNN) and Long Short-Term Memory (LSTM) networks. How are they used for sequence prediction and time-series forecasting? (10)
- OR**
- Q9. Write detailed notes on: (10)
- a) Object Detection techniques using deep learning
 - b) Transfer Learning
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- P/H