

DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Bachelor of Technology (Artificial Intelligence (AI) and Data Science) SEMESTER - 6 Winter 2025 (Supply.)

Course :Bachelor of Technology (Artificial Intelligence (AI) and Data Science) Branch : Engineering and Technology

Semester : SEMESTER - 6

Subject Code & Name: BTAIC601 - DEEP LEARNING

Time : 3 Hours]

[Total Marks : 60

Instructions to the Students:

1. Each question carries 12 marks.
2. Question No. 1 will be compulsory and include objective-type questions.
3. Candidates are required to attempt any four questions from Question No. 2 to Question No.6
4. Use of non-programmable scientific calculators is allowed.
5. Assume suitable data wherever necessary and mention it clearly.

- Q1. Objective type questions. (Compulsory Question) 12
1. Deep learning is a) A type of machine learning algorithm b) A branch of artificial intelligence c) A technique for training neural networks d) All of the above
 2. The purpose of an activation function in a neural network is a) to introduce non-linearity to the network b) to determine the output of a neuron c) to help in backpropagation d) All of the above
 3. How many layers Deep learning algorithms are constructed? a) 2 b) 3 c) 4 d) 5
 4. Which is NOT a component of a biological neuron? a) Dendrites b) Axon c) Synapse d) Nucleus
 5. Which is a common activation function used in the output layer for binary classification? a) Sigmoid b) ReLU (Rectified Linear Unit) c) Tanh d) Softmax
 6. The purpose of pooling layers in a convolutional neural network (CNN) is a) To reduce the size of the input data b) To perform spatial down sampling c) To extract the most important features d) All of the above
 7. What type of neural network is used for image classification tasks? a) Recurrent Neural Network (RNN) b) Multilayer Perceptron (MLP) c) Convolutional Neural Network (CNN) d) Radial Basis Function Network (RBFN)
 8. Perceptron is a) A single-layer feedforward network with pre-processing. b) An auto associative neural network. c) A double-layer auto associative neural network. d) A multilayer perceptron.
 9. In deep learning the role of gradient descent is a) To minimize the loss function b) To find the optimal weights for the neural network c) To update the network's parameters d) All of the above
 10. In deep learning backpropagation is used for a) To calculate the gradients for updating the network's parameters b) To propagate errors from the output layer to the input layer c) To train a neural network d) All of the above
 11. In CNN, having max pooling always decreases the parameters? a) True b) False c) Can be true and false d) Can not say
 12. For an image recognition problem, which architecture of neural network would be better suited to solve the problem? a) Multi Layer Perceptron b) Convolutional Neural Network c) Recurrent Neural network d) Perceptron

- Q2. Solve the following.
- A) Differentiate between: Artificial Neuron and Biological Neuron. 6
 - B) Explain applications of Deep Learning algorithms 6
- Q3. Solve the following.
- A) Explain Building Blocks of Convolutional Neural Network 6
 - B) What are different CNN Architectures? Give description for LeNet and Alex Net. 6
- Q4. Solve Any Two of the following.
- A) Explain working of Recurrent Neural Network (RNN). 6
 - B) Explain in brief about Sequential/Temporal Data. 6
 - C) Explain Text Generation With LSTM And GRU. 6
- Q5. Solve Any Two of the following.
- A) Explain Variational Autoencoder. 6
 - B) Write short note on -Image Denoising. 6
 - C) Explain Semantic Segmentation technique. 6
- Q6. Solve Any Two of the following.
- A) Explain Early Stopping and Dropout in effective training. 6
 - B) Discuss transfer learning with advantages, disadvantages and uses. 6
 - C) Explain Gradient Descent and its variants. 6

*** End ***