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NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech

SEM: II - THEORY EXAMINATION (2025 - 2026)

Subject: Deep Learning

Time: 3 Hours

Max. Marks: 70

General Instructions:

IMP: Verify that you have received the question paper with the correct course, code, branch etc.

1. This Question paper comprises of **three Sections -A, B, & C**. It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.
2. Maximum marks for each question are indicated on right -hand side of each question.
3. Illustrate your answers with neat sketches wherever necessary.
4. Assume suitable data if necessary.
5. Preferably, write the answers in sequential order.
6. No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.

SECTION-A

15

1. Attempt all parts:-

- (1.1) TensorFlow is the product of which company?[CO1,K1] 1
- (a) Google research team
 - (b) Amazon technical team
 - (c) PayPal
 - (d) none of these
- (1.2) Which activation function is mostly used in hidden layers of CNNs? [CO2,K1] 1
- (a) Sigmoid
 - (b) Linear
 - (c) Softmax
 - (d) ReLU
- (1.3) The amount of output of one unit received by another unit depends on what? [CO3,K1] 1
- (a) output unit
 - (b) input unit
 - (c) hidden layer
 - (d) weight
- (1.4) Which neural network is mainly used for image processing?[CO4,K2] 1
- (a) GAN
 - (b) BNN
 - (c) CNN
 - (d) ANN

- (1.5) LSTM is a type of: [CO5,K2] 1
- (a) GAN
 - (b) Regression Model
 - (c) CNN
 - (d) RNN

2. Attempt all parts:-

- (2.1) Define Keras?[CO1,K1] 2
- (2.2) Define activation function? [CO2,K1] 2
- (2.3) Describe Backpropagation ? [CO3,K2] 2
- (2.4) Draw the linear regression model. [CO4,K2] 2
- (2.5) Mention two applications of Deep Learning. [CO5,K3] 2

SECTION-B

20

Answer any one of the following:-

- (3.1) What is tensor flow? Write different advantages of tensor flow in AI. [CO1,K2] 4
- (3.2) Explain Sigmoid activation function with advantages and disadvantages.?[CO1,K2] 4

Answer any one of the following:-

- (3.3) What are the characteristics of ReLU and sigmoid activation function? [CO2,K3] 4
- (3.4) Explain XOR Gate problem in Perceptron.[CO2,K1] 4

Answer any one of the following:-

- (3.5) Explain Hyperbolic Tangent function with diagram. [CO3,K3] 4
- (3.6) What is mean by underfitting in a model? And what are the major causes of the underfitting. [CO3,K3] 4

Answer any one of the following:-

- (3.7) Explain Feature Selection and Hyperparameters. [CO4,K2] 4
- (3.8) Describe Regularization methods. [CO4,K1] 4

Answer any one of the following:-

- (3.9) Draw and explain the architecture Unfolded Recurrent Neural Networks.[CO5,K3] 4
- (3.10) Discuss applications of RNN in NLP. [CO5,K3] 4

SECTION-C

35

4. Answer any one of the following:-

- (4.1) Explain different features of deep learning? How these features implemented to perform various applications?[CO1,K3] 7
- (4.2) Explain TensorBoard and modularity in TensorFlow with examples.[CO1,K3] 7

5. Answer any one of the following:-

- (5.1) Discuss Artificial Neural Networks and Perceptron Training Rule in detail.[CO2,K3] 7
- (5.2) Differentiate the working of a single-layer perceptron and multi layer perceptron?[CO2,K3] 7

6. Answer any one of the following:-

- (6.1) Explain Gradient Descent and Backpropagation Algorithm with examples?[CO3,K3] 7
- (6.2) Discuss Cross Validation in Deep Learning with example?[CO3,K3] 7
7. Answer any one of the following:-
- (7.1) Discuss Optimization and Regularization techniques used in Deep Learning.[CO4,K3] 7
- (7.2) Overview of Different layers in Convolutional Neural Networks (CNN).[CO4,K2] 7
8. Answer any one of the following:-
- (8.1) Discuss the mechanism of working of RNN and LSTM with applications. [CO5,K3] 7
- (8.2) Why deep learning is an important tool for image processing? [CO5,K2] 7

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