

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech

SEM: II - THEORY EXAMINATION (2024 - 2025)

Subject: Neural Network

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-a. Select right option TensorFlow is the product of which company?[CO1,K2] 1
- (a) Google research team
 - (b) Amazon technical team
 - (c) PayPal
 - (d) none of these
- 1-b. Mark neural network is useful for image processing? [CO2,K2] 1
- (a) Convolutional neural Network (CNN)
 - (b) Multi perceptron
 - (c) Recurrence neural Network (RNN)
 - (d) none of these
- 1-c. Tick the following is a subset of machine learning? [CO3,K2] 1
- (a) . Numpy
 - (b) SciPy
 - (c) Deep Learning
 - (d) All of the above
- 1-d. Tick most popular features that can be accomplished using affine transformations?[CO4,K1] 1
- (a) arbitrary rotation
 - (b) scaling

- (c) translation
 - (d) all of the mentioned
- 1-e. List correct option is the execution speed of brain neuron? [CO5,K2] 1
- (a) 1 mili sec
 - (b) 1 micro sec
 - (c) 1 nano sec
 - (d) none of these

2. Attempt all parts:-

- 2.a. List correct choice that Graphs have many benefits, explain popular ones briefly ?[CO1,K2] 2
- 2.b. Illustrate concept of classification problem with suitable example.[CO2,K2] 2
- 2.c. Memorise the term 'linearly separable patterns' refers to patterns that can be divided using a straight line or a linear boundary.[CO3,K1] 2
- 2.d. Define the weight update rule used in the perceptron model. [CO4,K1] 2
- 2.e. Interpret the reason for using Simulated Annealing in neural networks. [CO5,K3] 2

SECTION-B

20

3. Answer any five of the following:-

- 3-a. Explain the concept of an activation function along with examples of three types.[CO1,K2] 4
- 3-b. Define unsupervised learning and provide a detailed explanation with an example..[CO1,K1] 4
- 3-c. Explain the concept of a shallow neural network and describe its importance in deep learning. [CO2,K2] 4
- 3-d. Discuss the concept of a cost function and its importance in model prediction. [CO2,K2] 4
- 3.e. List the different types of regression and provide a detailed explanation of logistic regression.[CO3,K1] 4
- 3.f. Define Autoencoder and explain its purpose. [CO4,K1] 4
- 3.g. Create Boltzmann and Gaussian Machines.with neat architectural diagram, [CO5,K5] 4

SECTION-C

35

4. Answer any one of the following:-

- 4-a. Discuss Convolutional Neural Network (CNN), illustrate its architecture, and provide a detailed explanation.[CO1,K2] 7
- 4-b. Describe the characteristics of bipolar and Gaussian activation functions, and explain them with mathematical formulations.[CO1,K2] 7

5. Answer any one of the following:-

- 5-a. Demonstrate the different types of learning in deep learning? Provide a detailed explanation of unsupervised learning.[CO2,K3] 7

- 5-b. Explain the differences between CNN and ANN. Discuss two key points. [CO2,K2] 7
6. Answer any one of the following:-
- 6-a. Demonstrate the, principles behind RNN and also discuss it with the basic architecture? [CO3,K3] 7
- 6-b. Describe the architecture of Annealing Networks. Explain the reasons for using Simulated Annealing in Neural Networks. [CO3,K2] 7
7. Answer any one of the following:-
- 7-a. Explain the difference between Iterative Auto-Associative Networks and Associative Networks. [CO4,K2] 7
- 7-b. Formulate a detailed explanation of the various applications of Convolutional Neural Networks. [CO4,K5] 7
8. Answer any one of the following:-
- 8-a. Discuss Learning Vector and explain its features with suitable examples. [CO5,K2] 7
- 8-b. Demonstrate an N-gram? Provide a detailed explanation of the concept, and illustrate it with an example. [CO5,K3] 7

REG:JAN_JUN-2025