Printed Page:- 03 **Subject Code:- AMTAI0212**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech

SEM: II - THEORY EXAMINATION (2022-2023)

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. Which neural network is useful for machine translation and NLP?[CO1] 1

(a) Convolutional neural Network (CNN)

(b) Multi perceptron

(c) Recurrence neural Network (RNN)

(d) none of these

1-b. What is the main operation in TensorFlow? [CO2] 1

(a) Computing

(b) calculation

(c) Pipelining

(d) passing values and assigning the output to another tensor.

1-c. Which of the following functions can be used as an activation function in the output layer if we wish to predict the probabilities of n classes (p1, p2..pk) such that sum of p over all n equals to 1? [CO3] 1

(a) Softmax

(b) ReLu

(c) Sigmoid

(d) Tanh

1-d. State whether Hebb's law is supervised learning or of unsupervised type? [CO4] 1

(a) supervised

(b) unsupervised

(c) either supervised or unsupervised

(d) can be both supervised & unsupervised

1-e. How many different numbers of Perceptron used for implemented for XOR gate? [CO5] 1

(a) 1

(b) 2

(c) 3

(d) none of these

2. Attempt all parts:-

2.a. Explain different features of neural network?[CO1] 2

2.b. Why training is needed in an AI model? [CO2] 2

2.c. Give two examples of layering. [CO3] 2

2.d. What is the difference between auto associative memory? [CO4] 2

2.e. What is Logicon Projection Network ? [CO5] 2

SECTION B **20**

3. Answer any <u>five</u> of the following:-

3-a. Write every step for data collection to prediction for a machine learning algorithm.[CO1] 4

3-b. Define what is training and testing of data set in an AI model? Also draw a perceptron model and show these data set.[CO1] 4

3-c. What is delta rule, explain with an example? [CO2] 4

3-d. What do you mean by feature extraction in data analysis? Detail discusses with one example.[CO2] 4

3.e. What is Kernel filter explain detail?[CO3] 4

3.f. What is Probabilistic Neural Net? Explain with an example. [CO4] 4

3.g. What is the benefit of Cellular Neural Network ? [CO5] 4

SECTION C **35**

4. Answer any <u>one</u> of the following:-

4-a.	What is biological neural network? Draw it architecture and describe. And explain each element of the network [CO1]	7
4-b.	What is the need of training algorithm? What is gradient descent algorithm? Explain it with an example. [CO2]	7

5. Answer any <u>one</u> of the following:-

5-a.	What is Artificial neural network? Draw it working model for training and testing architecture and describe. [CO2]	7
5-b.	What is artificial intelligence and how it is differ from machine learning? Write the advantages of artificial intelligence. [CO2]	7

6. Answer any <u>one</u> of the following:-

6-a.	What is importance of filters in Recurrent Neural Networks explain all types with suitable examples? [CO3]	7
6-b.	What is Probabilistic Neural Net? Explain with an example. [CO3]	7

7. Answer any <u>one</u> of the following:-

7-a.	What is the benefit of Cellular Neural Network ? [CO4]	7
7-b.	What is Cauchy machine and What is advantages of Boltzmann Machine ? [CO4]	7

8. Answer any <u>one</u> of the following:-

8-a.	Gives a full analytic view on Kohonen Self Organizing Feature Maps. [CO5]	7
8-b.	What is an activation function? What are the characteristics of bipolar and gaussian activation function, explain with mathematical formulation? [CO5]	7