Printed Page:- 02 **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 (2023- 2024)

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. Mention the execution speed of brain neuron?[CO1] 1

(a) 10^-6

(b) 10^−3

(c) 10^−9

(d) none of these

1-b. Mention reason the way Hidden layer is affected with increase in complexity of neural network?[CO2] 1

(a) Increases

(b) decreases

(c) unaffected

(d) may be decreases or increases

1-c. Mention the appropriate meaning Negative sign of weight indicates?[CO3] 1

(a) excitatory input

(b) inhibitory input

(c) excitatory output

(d) inhibitory output

1-d. Mention states of units be updated in hopfield model? [CO4] 1

(a) synchronously

(b) asynchronously

(c) synchronously and asynchronously

(d) none of the mentioned

1-e. Mark that is not the basic element of neural network? [CO5] 1

(a) Input layer

(b) Middle layer

(c) Hidden layer

(d) Output layer

2. Attempt all parts:-

2.a.	Differentiate between supervise and unsupervised learning? [CO1]	2
2.b.	Explain concept of Perceptron neural network? [CO2]	2
2.c.	Differentiate between reinforcement learning and unsupervised learning?[CO3]	2
2.d.	Illustrate the concept of backpropagation algorithm architecture with neat diagram. [CO4]	2
2.e.	Illustrate Cascade Correlation Network with proper explanation? [CO5]	2

SECTION B **20**

3. Answer any five of the following:-

3-a.	Mention the characteristics of Bipolar, binary and sigmoid activation function?[CO1]	4
3-b.	Explain the need of pre-processing data set with suitable example .[CO1]	4
3-c.	Explain gradient descent algorithm with an example [CO2]	4
3-d.	Explain the concept Recurrent Neural Network architecture with neat diagram. [CO2]	4
3.e.	Explain the architecture of Convolutional Neural Network with suitable diagram?[CO3]	4
3.f.	Describe concept of Tanh function? Explain it with its mathematical representation. [CO4]	4
3.g.	Explain Iterative Auto associative Networks, explain with its architecture? [CO5]	4

SECTION C **35**

4. Answer any one of the following:-

4-a.	Explain learning rate with proper example and how learning rate affect a neural network model. [CO1]	7
4-b.	Illustrate concept of an activation function? Mention the characteristics of ReLU and sigmoid activation function, explain with mathematical formulation? [CO1]	7

5. Answer any one of the following:-

5-a.	Explain concept of Kernel filter in detailed manner? [CO2]	7
5-b.	Explain concept of Lasso and rigid Regression in detailed manner along with suitable example.[CO2]	7

6. Answer any one of the following:-

6-a.	Describe importance of filters in CNN in detailed way? Discuss how the filter size depends on the input data. [CO3]	7
6-b.	Explain the concept of t weight initialization in neural networks along with suitable example.[CO3]	7

7. Answer any one of the following:-

7-a.	Mention Simulated Annealing Network Networks? [CO4]	7
7-b.	Illustrate Cascade Correlation Network Architecture? [CO4]	7

8. Answer any one of the following:-

8-a.	Gives a full analytic view on Kohonen Self Organizing Feature Maps. [CO5]	7
8-b.	Explain Concept of Resonance Theory, discuss its all features. [CO5]	7