Printed Page:- **Subject Code**:- **ACSML0602**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: VI - THEORY EXAMINATION (2022-2023)

Subject: Deep Learning

Time: 3 Hours **Max. Marks: 100**

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 **20**

1. Attempt all parts:-

1-a. A single iteration over the entire training set is called as an (CO1) 1

(a) Epoch

(b) clock

(c) cycle

(d) None of the above

1-b. PCA stands for (CO1) 1

(a) peer component analysis

(b) principal component analysis

(c) power component analysis

(d) None of the above

1-c. Neural network that has only one hidden layer between the input and output. (CO2) 1

(a) Deep neural network

(b) Feed-forward neural networks

(c) Recurrent neural networks

(d) Shallow neural network

1-d. Assume a simple MLP model with 3 neurons and inputs=1,2,3. The weights of the input neurons are 4,5, and 6 respectively. Assume the activation function is a linear constant value of 3. What will be the output? (CO2) 1

(a) 64

(b) 128

(c) 32

(d) 96

1-e. Identify the type of learning in which labeled training data is used. (CO3) 1

(a) Semi unsupervised learning

(b) Supervised learning

(c) Reinforcement learning

(d) Unsupervised learning

1-f. In an Unsupervised learning (CO3) 1

(a) Specific output values are given

(b) Specific output values are not given

(c) No Specific input values are given

(d) Neither inputs nor outputs are given

1-g. ---------- is a neural network architecture used for pattern recognition (CO4) 1

(a) Kohonen SOM

(b) Radial Basis Function Network

(c) Multilayer Perceptron

(d) All of the above

1-h. The model that contains internal memory is (CO4) 1

(a) Convolutional Neural Networks (ConvNots)

(b) Capsule Neural Networks (CapsNots)

(c) RNN (Recurrent Neural Network)

(d) Simple ANN

1-i. Autoencoders are trained using _____. (CO5) 1

(a) Feed forward

(b) feed back ward

(c) back propogation

(d) They do not require Training

1-j. Which of the following is correct about Dropout? (CO5) 1

(a) Dropout is a regularization technique

(b) Dropout solves vanishing gradient problem

(c) Dropout solves gradient problem

(d) none of these

2. Attempt all parts:-

2.a. Elaborate unstructured data (CO1) 2

2.b. Define Convolution. (CO2) 2

2.c. Explain Padding in detection. (CO3) 2

2.d. Define one-to-one RNN . Give one example . (CO4) 2

2.e. Explain about Bottleneck in autoencoder. (CO5) 2

SECTION B **30**

3. Answer any five of the following:-

3-a. Discuss bias and variance trade off. (CO1) 6

3-b. write a short note on p-value and precision recall. (CO1) 6

3-c. Describe computational graph in Deep Learning. (CO2) 6

3-d. Why CNN is most preferred for the image data? (CO2) 6

3.e. Draw and explain the architecture of convolutional network. (CO3) 6

3.f. Define RNN and its uses. (CO4) 6

3.g. Describe the approach used in Denoising Autoencoders. (CO5) 6

SECTION C **50**

4. Answer any one of the following:-

4-a. Explain different ways of representing the data in the neural network system. (CO1) 10

4-b. Generate OR function using McCulloch –pitts neuron model with threshold T=3 , w1=3,and w2=3. (CO1) 10

5. Answer any one of the following:-

5-a. Explain the use of the convolution layer in CNN with example. (CO2) 10

5-b. Explain deep convolutional Q-learning. (CO2) 10

6. Answer any one of the following:-

6-a. Explain Filtering, Stride and Padding in Convolutional Neural Network. (CO3) 10

6-b.	Discuss the motivation behind using auxiliary loss function in Inception network. (CO3)	10

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

7-a.	Define the difference between deep RNN and bi-directional RNNs. (CO4)	10
7-b.	Explain in following in details i) LSTM, ii) ISTM (CO4)	10

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

8-a.	Give the differences between an Autoencoder and PCA in Terms of Dimensionality Reduction. (CO5)	10
8-b.	Explain the differences between overcomplete and undercomplete autoencoders. (CO5)	10