Printed Page:-03 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 (2024 - 2025)

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. _____ refers to a model that can neither model the training data nor generalize to new data (CO1,K2) 1

(a) Complex model, Overfit

(b) Complex model, Underfit

(c) Simple model, Underfit

(d) Simple model, Overfit

1-b. For a neural network, which one of these structural assumptions is the one that most affects the trade-off between underfitting and overfitting (CO1,K2) 1

(a) The number of hidden nodes

(b) The learning rate

(c) The initial choice of weights

(d) The use of a constant-term unit input

1-c. Deep learning algorithms are _____ more accurate than machine learning algorithms in image classification (CO2,K1) 1

(a) 0.0037

(b) 0.0041

(c) 0.33

(d) 0.004

1-d. How many layers of Deep learning algorithms are constructed (CO2,K2) 1

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(a) 3
(b) 4
(c) 2
(d) 5

1-e. In a simple MLP model with 8 neurons in the input layer, 5 neurons in the hidden layer and 1 neuron in the output layer, The size of the weight matrices between hidden output layer and input hidden layer? (CO3,K4) 1

(a) [1 X 5] , [5 X 8]
(b) [5 x 1] , [8 X 5]
(c) [8 X 5] , [5 X 1]
(d) [8 X 5] , [1 X 5]

1-f. Choose from the following which would have a constant input in each epoch of training a Deep Learning model (CO3,K2) 1

(a) Weight between input and hidden layer
(b) Weight between hidden and output layer
(c) Biases of all hidden layer neurons
(d) Activation function of output layer

1-g. RNN falls under (CO4,K3) 1

(a) Supervised
(b) Unsupervised
(c) Reinforce learning
(d) None of the above

1-h. Vanilla Neural Network is the example of (CO4,K1) 1

(a) One-to -one RNN
(b) One-to-Many RNN
(c) Many-to-One RNN
(d) Many-to-many RNN

1-i. _____ is a recommended Model for Pattern Recognition in Unlabeled Data.(CO5,K3) 1

(a) CNN
(b) Auto encoder
(c) auto decoder
(d) RNN

1-j. Autoencoders are trained using _____. (CO5,K2) 1

(a) Feed forward
(b) feed back ward
(c) back propogation
(d) They do not require Training

2. Attempt all parts:-

2.a.	List out the fector that drive the popularity of machine learning (CO1,K1)	2
2.b.	The different types of pooling layers in a CNN architecture. Explain (CO2,K2)	2
2.c.	Define Recognition (CO3, K1)	2
2.d.	Explain "Pipelines in Machine Learning" (CO4 ,K2)	2
2.e.	Define Autoencoders. (CO5,K1)	2

SECTION-B 30

3. Answer any five of the following:-

3-a.	Define curse of dimensionality .(CO1 ,K1)	6
3-b.	Use of Overfitting and underfitting.(CO1,K2)	6
3-c.	How can hyperparameters be trained in neural networks (CO2,K2)	6
3-d.	Which deep learning algorithm is best for image classification? Explain. (CO2,k1)	6
3.e.	Draw and explain the architecture of convolutional network. (CO3,k2)	6
3.f.	Describe Echo State Networks & Explain challenge of Long-Term Dependencies. (CO4,k1)	6
3.g.	How can Neural Networks be Unsupervised (CO5,K2)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Discuss dimensionality reduction and its benefits. (CO1,K2)	10
4-b.	Find the RMSE and MSE in a linear regression model (CO1,K1)	10

5. Answer any one of the following:-

5-a.	List some common problems faced while implementing a deep learning model for image classification (CO2,K2)	10
5-b.	Explain the use of the convolution layer in CNN with example. (CO2,K2)	10

6. Answer any one of the following:-

6-a.	Differentiate between a convolutional layer and an inception module in a Google net network architecture (CO3,K2)	10
6-b.	Mention some advantages of deep learning over traditional machine learning algorithms for image recognition and other tasks that require understanding of image (e.g., object detection) (CO3 ,K3)	10

7. Answer any one of the following:-

7-a.	Define unfolding in time and bi-directional RNNs. (CO4,K1)	10
7-b.	Define the difference between deep RNN and bi-directional RNNs. (CO4,K2)	10

8. Answer any one of the following:-

8-a.	Give Two Actual Case Studies Where Autoencoders Have Been Used (CO5,K3)	10
8-b.	Name some of the Autoencoder Variations. Also, explain them (CO5,K2)	10

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