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# NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA
(An Autonomous Institute Affiliated to AKTU, Lucknow)
B.Tech
SEM: VII - 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          1
        generalize to new data (CO1,K3)

   (a)    Complex model, Overfit

   (b)    Complex model, Underfit

   (c)    Simple model, Underfit

   (d)    Simple model, Overfit

1-b.    A single iteration over the entire training set is called as an(CO1,K3)              1

   (a)    Epoch

   (b)    clock

   (c)    cycle

   (d)    None of the above

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

   (a)    3

   (b)    4

   (c)    2

   (d)    5

1-d.        _____ is Limitation of deep learning(CO2,K1)                                  1

   (a)    Obtain huge training datasets

   (b)    Data labeling

(c) None of the above

(d) All of above

1-e. Functions that 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 is? (CO3,K3)  1

(a) Softmax

(b) ReLu

(c) Sigmoid

(d) Tanah

1-f. Choose from the following which would have a constant input in each epoch of training a Deep Learning model (CO3,K3)  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. Outputs of RNN depends on (CO4,K2)  1

(a) Prior elements within the sequence

(b) Prior elements outside the sequence

(c) All the above

(d) None of the above

1-h. RNN can handel(CO4,,K3)  1

(a) The sequencial data

(b) Accepting the current input data & previously received inputs

(c) None of the above

(d) All of the above

1-i. Autoencoders are trained using.(CO5,K3)  1

(a) Feed Forward

(b) feed back

(c) Back Propagation

(d) They do not require Training

1-j. Autoencoders cannot be used for Dimensionality Reduction.es of _____.(CO5,K3)  1

(a) Correct

(b) can not say

(c) Incorrect

(d) none of these

2. Attempt all parts:-

2.a. List out the fector that drive the popularity of machine learning (CO1,K2)  2

| 2.b. | Explain flattening layer in CNN architecture (CO2,K4) | 2 |
|---|---|---|
| 2.c. | Define Recognition (CO3,K2) | 2 |
| 2.d. | Explain the tool that can be used to draw RNN models .(CO4,K3) | 2 |
| 2.e. | Define Autoencoders. (CO5,K1) | 2 |

**SECTION-B**       30

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

| 3-a. | Elaborate perception in deep learning (CO1,K1) | 6 |
|---|---|---|
| 3-b. | Define delta rule.(CO1,K3) | 6 |
| 3-c. | How can hyperparameters be trained in neural networks (CO2,K4) | 6 |
| 3-d. | Give some examples of classification text (CO2,K2) | 6 |
| 3.e. | Draw and explain the architecture of convolutional network .(CO3,K3) | 6 |
| 3.f. | Compare with the Unfolding Computational Graphs and Bidirectional RNNs . (CO4,K3) | 6 |
| 3.g. | Discuss the use of decoder.(CO5,K1) | 6 |

**SECTION-C**       50

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

| 4-a. | Discuss dimensionality reduction and its benefits (CO1,K2) | 10 |
|---|---|---|
| 4-b. | Explain Perceptron Convergence Theorem.(CO1,K4) | 10 |

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

| 5-a. | List some common problems faced while implementing a deep learning model for image classification (CO2,K6) | 10 |
|---|---|---|
| 5-b. | Explain the use of the convolution layer in CNN with example (CO2,K4) | 10 |

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

| 6-a. | 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 |
|---|---|---|
| 6-b. | Differentiate between 1x1 convolution and fully connected layer(CO3,K3) | 10 |

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

| 7-a. | Explain how to compute the gradient in a Recurrent Neural Network (CO4,K3) | 10 |
|---|---|---|
| 7-b. | Prepare an example of sequence model or sequence-to-sequence RNN architecture (CO4,K2) | 10 |

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

| 8-a. | Give Two Actual Case Studies Where Autoencoders Have Been Used (CO5,K3) | 10 |
|---|---|---|
| 8-b. | Describe Bottleneck, and Why is it Used (CO5,K3) | 10 |