ECS-VII-CBGC 14th Dec 2022

(3 Hours) Total Marks: 80

N.B. 1. Question **No. 1** is compulsory
2. Attempt any **three** questions from remaining five questions
3. Assume suitable data if **necessary** and justify the assumptions
4. Figures to the **right** indicate full marks

Q1 Solve any **four (4)**

A Compare Linear and Non linearly Separable Patterns with a suitable example. **20**

B Draw a neat diagram of any **five** activation functions **05**

C Perform Zero padding with p=1 on following: **05**

9	1
9	1

D What is **Selective Forget** in RNN? Explain with a suitable example. **05**

E Design and explain auto encoder model for denoising images **05**

Q2 A Solve the following classification problem using the Perceptron learning rule. The input/target for our test problems are (P1 = [2 2]', t1 = 0), (P2 = [1 -2]', t2 = 1), (P3 = [-2, -2]', t3 = 0), (P4 = [-1, 1]', t4 = 1) . Initial weight vector w (0) = [0, 0]t and bias b(0)=0. Assume learning rate c=1 and unipolar binary activation function. Show only 2 cycles. **10**

B With the help of a neat diagram explain the Error Backpropagation Perceptron Training Algorithm (EBPTA). Derive the equation for change in weight in the hidden layer and output layer. **10**

Q3 A Explain how Recurrent Neural Network (RNN) can be used for text summarization application and Design and draw the architecture for the same. **10**

B What is a Gated Recurrent Unit? Illustrate with a diagram. **10**

Q4 A Briefly describe VGGNet deep learning architecture.

B Perform max pooling and average pooling for both stride =1 and stride = 2 with filter size = 2 X 2. **10**

9	9	9	1
3	9	9	1
9	9	9	9
9	9	9	9

Q5 A What is an Autoencoder? Draw and explain each of its components. 10

B Select and justify in detail for which of the following applications, Autoencoder can be used: 10

I. Image coloring

II. Removing watermarks from Image

Q6 Write short notes on Any TWO (2)

A Image Compression 20

B Credit card Fraud Detection 10

C Generative Adversarial Networks 10