BE Sem-VII C-Scheme Summer 2025 ECS

6/6/25

(3 Hours) [Total Marks 80]

N.B: 1) Question **number 1** is compulsory.
2) Attempt **any three** out of the remainingquestions.
3) Assume suitable data if **necessary** and justify the assumptions.
4) Figures to the **right** indicate full marks.

1. Attempt the following-

a) Draw and explain structure of biological neuron . [05]

b) Explain Mini batch gradient descent algorithm. [05]

c) What is the role of activation function in neural network? Explain any one activation function in brief? [05]

d) Explain Least square error (LSE)and least absolute deviation (LAD) loss functions used in deep learning and mention their typical use cases. [05]

2.a) Explain the operation and applications of CNN? [10]

b) Explain the working of auto encoders? Compare and contrast under complete and over complete auto encoders. [10]

3. a) Explain recurrent neural networks? how they are different than CNN?. [10]

b) Differentiate between linearly separable and non separable classes? [10]

4.a) Explain concept of over fitting and underfitting?Explain L1 and L2 regularization? [10]

b) Draw and explain the architecture of Generative adversarial networks (GAN) and write any two applications of GAN. [10]

5.a) Explain how backpropagation through convolution happens in convolution neural networks. [10]

b) Compare perceptron and Delta learning rule. [10]

6. Attempt the following

a) Explain the operation of Sparse auto encoder? What are its applications? [10]

b) Explain the operation of deep learning in Brain tumour detection? [10]

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