

BACHELOR OF TECHNOLOGY (CBCS) (2020 COURSE)
B.Tech.Sem - VII COMPUTER SCIENCE & ENGINEERING : WINTER : 2023
SUBJECT : DEEP LEARNING

Day : Thursday

Time : 02:30 PM-05:30 PM

Date : 7/12/2023

W-24344-2023

Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the right indicate **FULL** marks.
- 3) Use of non-programmable calculator is allowed.

Q.1 Define gradient decent. List and explain type's gradient decent in detail. (10)

OR

Draw and explain McCulloch Pitts Neuron.

Q.2 Define data augmentation. How does it work? Also, describe image processing activities for data augmentation. (10)

OR

Define Regularization. Explain Regularization techniques in deep learning.

Q.3 Describe various activation functions used in Convolutional Neural Network. (10)

OR

Determine the shape of output matrix of an image size 19×19 (Consider any image of size 19×19) that uses a padding size 2, stride size 2 and a 5×5 filter.

Q.4 The vanishing gradient problem is more pronounced in RNN than in traditional Neural Network. Give reason. Discuss a solution for the problem. (10)

OR

Differentiate between LSTM and GRU.

Q.5 Describe fundamental challenges in optimizing Deep Neural Network. Provide real-world examples to illustrate these challenges. (10)

OR

Elaborate on the concept of momentum in optimization algorithms. How does momentum help in overcoming certain challenges during training and what are the typical values used for momentum in practice?

Q.6 Explain training techniques employed in ChatGPT, including supervised learning and reinforcement learning. Explain the challenges and trade off associated with these approaches. (10)

OR

Describe the following terms:

- i) Natural language processing
- ii) Computer vision

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