



Seventh Semester B.E./B.Tech. Degree Examination, Dec.2024/Jan.2025
Deep Learning

Time: 3 hrs.

Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

- 1 a. Explain the concept of tasks(T), Performance (P) and Experience (E). Describe the following with respect to tasks performance and experience.
 - i) Checker learning problem
 - ii) Handwriting recognition learning problem (12 Marks)
- b. Explain the concept of supervised and unsupervised learning with example. (08 Marks)

OR

- 2 a. Explain the historical trends in deep learning. (10 Marks)
- b. Define supervised and unsupervised learning algorithm. Describe KNN and K means algorithm. (10 Marks)

Module-2

- 3 a. Explain about gradient based learning. (10 Marks)
- b. Explain the concept of Back propagation and how it helps in a Neural network. (10 Marks)

OR

- 4 a. Define Regularization. Describe L^1 and L^2 regularization. (10 Marks)
- b. Given $W = \begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$, $C = \begin{bmatrix} 0 \\ -1 \end{bmatrix}$, $W = \begin{bmatrix} 1 \\ -2 \end{bmatrix}$ and $b = 0$ draw feed forward network and evaluate XOR function. (10 Marks)

Module-3

- 5 a. What are the challenges in neural network optimization? (10 Marks)
- b. Explain the following algorithms
 - i) RMSProp
 - ii) RMSProp with momentum. (10 Marks)

OR

- 6 a. Explain stochastic gradient descent and momentum algorithms (10 Marks)

- b. Give the list of adaptive learning rates algorithms. Write the Ada Grad algorithm. (10 Marks)

Module-4

- 7 a. Explain the following with suitable diagram.
i) Sparse interactions ii) Parameter sharing. (10 Marks)
- b. Explain briefly variant of the CNN models. (10 Marks)

OR

- 8 a. Differentiate locally connected layers, tiled convolution and standard convolution with suitable example and diagram. (10 Marks)
- b. Explain the different layers in CNN models and its function with a neat diagram. (10 Marks)

Module-5

- 9 a. Discuss about Bidirectional Recurrent neural networks. (10 Marks)
- b. What is speech recognition? Explain the different types of speech recognition systems. (10 Marks)

OR

CMRIT LIBRARY
BANGALORE - 560 037

- 10 a. Explain Long Short-Term Memory (LSTM) working principles along with all the equations. (10 Marks)
- b. What is Natural language processing? Explain different steps involved in NLP. (10 Marks)

* * * * *