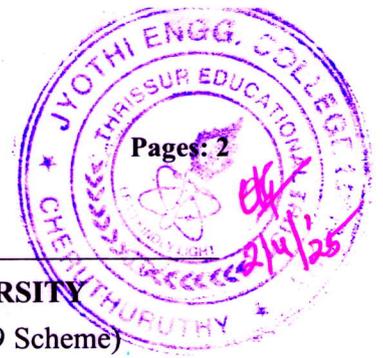


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Reg No.: _____

Name: _____

APJ ABDUL KALAM TECHNOLOGICAL UNIVERSITY
B.Tech Degree 7th semester (S,FE) Exam April 2025 (2019 Scheme)

Course Code: AIT401

Course Name: FOUNDATIONS OF DEEP LEARNING

Max. Marks: 100

Duration: 3 Hours

PART A

Answer all questions, each carries 3 marks.

Marks

- | | | |
|----|---|-----|
| 1 | Define loss function. | (3) |
| 2 | Point out under fitting, overfitting and best fitting in the context of machine learning. | (3) |
| 3 | Conceptualize parameter sharing in CNN. | (3) |
| 4 | What is the significance of weight initialization in neural machine training | (3) |
| 5 | Explain the role of kernel function in CNN architecture. | (3) |
| 6 | Visualize the dimensionality reduction in a Convolution block. | (3) |
| 7 | Draw the unfolded computational graph of a simple RNN layer. | (3) |
| 8 | How recursive RNN is different from simple RNN? | (3) |
| 9 | Write a note on Sparse Auto Encoder. | (3) |
| 10 | Describe the architecture of GRU. | (3) |

PART B

Answer any one full question from each module, each carries 14 marks.

Module I

- 11 a) Explain backpropagation algorithm in detail. (14)

OR

- 12 a) Explain any three activation functions in neural training. (6)
b) Illustrate the working of simple perceptron. (8)

Module II

- 13 a) Describe Gradient Descent algorithm and the variants in detail. (8)
b) Write a note on vanishing and exploding gradient problem. (6)

OR

- 14 a) Explain various regularization schemes. (7)
b) Describe the need of batch normalization layer in a deep learning architecture. (7)

Module III

- 15 a) Describe the Convolution Neural Network architecture in detail. (14)

OR

- 16 a) Describe the following terms in the context of CNN architecture (9)
- i) Sparse interactions
 - ii) Parameter sharing
 - iii) Equi-variant representation
- b) Explain in detail about any one pre-trained CNN model. (5)

Module IV

- 17 a) Illustrate the workings of the RNN with an example of a single sequence defined on a vocabulary of four words. (7)
- b) Illustrate Multilayer RNN with neat diagram. (7)

OR

- 18 a) Describe the GRU architecture in detail. (8)
- b) Draw the architecture and write a note on encoder-decoder model for sequential data processing with RNN. (6)

Module V

- 19 a) Describe about Boltzmann machine. (7)
- b) Explain Generative Adversarial Networks using a suitable diagram. (7)

OR

- 20 a) Explain auto encoders and its various types. (10)
- b) Discuss the applications of auto encoders (4)
