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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)

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