Q. Code: 146418

Reg. No. | | | | | | | | | | | | | |

B.E. / B.TECH. DEGREE EXAMINATIONS, MAY 2023

Fifth-Semester

AD18501 - DEEP LEARNING ALGORITHMS AND ARCHITECTURES

(Artificial Intelligence and Data Science)

(Regulation 2018)

TIME: 3 HOURS **MAX. MARKS: 100**

COURSE OUTCOMES	STATEMENT	RBT LEVEL
CO 1	Train models for multi-category classification.	**3**
CO 2	Train deep learning models and ensure the gradients are well controlled	**3**
CO 3	Construct a complex CNN and tune various hyper parameters	**5**
CO 4	Construct a sequential model which can capture the dependencies for time series data	**5**
CO 5	Familiar with the encoder-decoder architecture	**2**

PART- A (10 x 2 = 20 Marks)

(Answer all Questions)

		CO	RBT LEVEL
1.	How to generate synthetic data for regression?	**1**	**1**
2.	Differentiate between Logistics Regression and Softmax Regression.	**1**	**2**
3.	What are the different activation functions used in multilayer perceptron?	**2**	**1**
4.	List down the benefits and limits of MLP neural network.	**2**	**2**
5.	What is translation invariance?	**3**	**1**
6.	What is cross correlation?	**3**	**1**
7.	How does LSTM solve vanishing gradient problem?	**4**	**4**
8.	Give some example applications of bidirectional RNN.	**4**	**2**
9.	Why and when the autoencoders are preferred over PCA?	**5**	**4**
10.	What is the main difference between autoencoder and denoising autoencoder?	**5**	**2**

PART- B (5 x 14 = 70 Marks)

		Marks	CO	RBT LEVEL
11. (a)	Elaborate the steps involved in constructing a softmax regression network with appropriate loss function and optimization method.	**(14)**	**1**	**2**
	(OR)			
(b)	Discuss about different Model Evaluation methods in linear neural networks.	**(14)**	**1**	**2**

			Marks	CO	RBT LEVEL
12. (a)		With an example elaborate in detail about the implementation of multilayer perceptron.	**(14)**	**2**	**3**
		(OR)			
(b)		Illustrate the working of forward and backward propagation in a deep neural network.	**(14)**	**2**	**3**
13. (a)	**(i)**	Examine how fully connected layers are transformed to convolution layers.	**(7)**	**3**	**4**
	(ii)	Compare and contrast different types of pooling in detail.	**(7)**	**3**	**4**
		(OR)			
(b)	**(i)**	Categorize different methods for detecting object edges in an image.	**(7)**	**3**	**4**
	(ii)	Outline in detail about how multiple input and multiple output channels work.	**(7)**	**3**	**4**
14. (a)	**(i)**	Explain the functional dependencies in deep recurrent neural network in detail.	**(7)**	**4**	**2**
	(ii)	Illustrate the GRU architecture with their working.	**(7)**	**4**	**2**
		(OR)			
(b)		Explain in detail about the working of LSTM architecture.	**(14)**	**4**	**2**
15. (a)		With an example illustrate the Sequence-to-Sequence Attention Mechanisms.	**(14)**	**5**	**3**
		(OR)			
(b)		Elaborate in detail how the text data are handled by the transformers to perform the task of sequence-to-sequence learning.	**(14)**	**5**	**3**

PART- C (1 x 10 = 10 Marks)

(Q.No.16 is compulsory)

		Marks	CO	RBT LEVEL
16.	Construct the Convolutional Neural Network for digital handwritten recognition.	**(10)**	**3**	**5**

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