QP Code: SN22BTECH587 | Reg. No | | | | | | | | | | | AR 21

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech(Seventh Semester - Regular) Examinations, November – 2025

22BCDPE47011 - Deep Learning

(CSE-DS)

Time: 3 hrs | Maximum: 70 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	What are the different components of Tensorflow library	CO1	K1
b.	List of different supervised and unsupervised deep learning frameworks.	CO1	K1
c.	Compare the working mechanism of LSTM with Bidirectional LSTM.	CO3	K2
d.	Describe the importance of Adagrad optimizer	CO2	K2
e.	What is Sparse Autoencoder? Explain its advantages and disadvantages.	CO4	K1

PART – B **(15 x 4=60 Marks)**

Answer ***all*** the questions		Marks	CO #	Blooms Level
2. a.	What is DNN? Compare ANN with DNN and illustrate the mathematical derivation of Deep Neural network and also highlight the changes faced the network.	8	CO2	K2
b.	Explain in detailed about supervised deep learning framework with diagrams	7	CO1	K2
	(OR)			
c.	What is McCulloch-Pitts units neuron and threshold logic. Perform mathematical computation for AND , OR and AND NOT gates.	8	CO1	K2
d.	Write a short note on Adam optimizer with the help of example.	7	CO2	K2
3.a.	Illustrate about different types of activation functions explain with suitable diagrams and mathematical equations.	8	CO2	K2
b.	What is a linear perceptron? Explain the steps of Perceptron Learning Algorithm (PLA)	7	CO1	K2
	(OR)			
c.	Consider the given matrix Find the result of matrix addition, subtraction, multiplication, transpose and inverse : [2 4 1 3]	8	CO1	K3
d.	What are the different deep learning libraries used for developing deep learning models?	7	CO2	K2
4.a.	Illustrate the architecture of Convolution Neural Network (CNN) and explain the pooling operations with the help of examples.	8	CO3	K2
b.	Explain the working mechanism of Autoencoder. Compare Stochastic , Sparse and Contractive Autoencoder	7	CO4	K2
	(OR)			
c.	1. Given input vector:[1.0, 0.0, 0.5] and reconstructed output from autoencoder [0.8, 0.1, 0.4]. Calculate the Mean Squared Error(MSE). 2. Calculate the value of reconstructed output with linear decoder given latent	8	CO3	K2

	vector(z)=2.0, Decoder weight = 0.6, Bias = 0.2. 3. Find the compression space by considering the given data: 1024 dimension to 16 dimension.			
d.	Consider the given data and calculate total number of parameters for all the layers. Convolution 1- 16 features, 3X3 size, 3 input channel; Convolution 2- 32 features, 3X3 size, 16 input channel ; Fully Connected Layer- 128 fetaures, 64 Outpul Channels.	7	CO3	K3
5.a.	Explain the encoding and decoding mechanism for Autoencoder architecture. Illustrate the importance of Denoising, Undercomplete and Regularised autoencoder	8	CO4	K2
b.	Compare the working mechanism of RNN and Bidirectional RNN with the help of architecture diagram and description.	7	CO3	K2
	(OR)			
c.	What is Long Short Term Memory? Explain with the help of detailed architecture and also compare it with Bi-LSTM.	8	CO3	K2
d.	Provide a comparative analysis of RMSprop and Stochastic Gradient Descent Optimizers.	7	CO4	K2

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