

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



B. Tech. (Sixth Semester - Regular) Examinations, April 2026

**21BCDE47011 – Deep Learning
(CSEAIML)**

Time: 3 hrs

Maximum: 60 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 libraries used for implementing Deep Learning model?	CO1	K1
b. What is Deep Feed Forward Network?	CO2	K1
c. Define ImageNet and LeNet	CO3	K1
d. Explain the working mechanism of encoder and decoder.	CO4	K2
e. What are the different application of Natural Language Processing (NLP)?	CO5	K1

PART – B

(10 x 5=50 Marks)

Answer **ALL** the questions

	Marks	CO #	Blooms Level
2. a. What are optimizers? Compare Adam and Adagrad Deep Learning optimizers	5	CO2	K2
b. Implement AND logical function in MP neuron by considering threshold=2. Find output for given input: $x_1=1, x_2=0, w_1=1, w_2=1$.	5	CO1	K4
(OR)			
c. Briefly illustrate the concept of SGD, Adagrad, RMSprop, and Adam.	5	CO2	K3
d. Write a short note on TensorFlow deep learning library.	5	CO1	K2
3.a. Discuss working of Encoder-Decoder model. Explain Autoencoders for dimensionality reduction.	5	CO4	K2
b. Consider the given data and perform gate calculation in LSTM: Input $x_t=0.7$ Previous Hidden State $h_{t-1}=0.5$, Previous Cell State $c_{t-1}=0.6$ Forget Gate: $W_f=0.4, U_f=0.3, B_f=-0.1$ Input Gate: $W_i=0.5, U_i=0.2, B_i=0.05$ Candidate Cell State: $W_c=0.6, U_c=0.4, B_c=-0.2$ Output Gate: $W_o=0.3, U_o=0.5, B_o=0.1$	5	CO3	K4
(OR)			
c. Consider a random dataset and perform Pooling, Padding and Convolution operations.	5	CO3	K3
d. Describe Contractive Autoencoder and its advantages	5	CO4	K2
4.a. Illustrate the working mechanism of RMSprop optimizers and its usage in deep learning applications	5	CO2	K2
b. Discuss challenges and future trends in NLP and LLMs.	5	CO5	K3
(OR)			
c. What is Deep Feed Forward Network? Compare its working mechanism with Deep Neural Network.	5	CO2	K2
d. Explain Word2Vec, GloVe, and FastText in detail..	5	CO5	K2
5.a. What is VGGNet architecture? Explain in detail regarding VGG16 architecture with the help of diagrammatic analysis.	5	CO3	K2

b.	Explain the details about Bidirectional Long Short Term Memory with the help of diagram.	5	CO3	K2
(OR)				
c.	Compare Recurrent Neural Network (RNN) with Bidirectional Recurrent Neural Network(BRNN)	5	CO3	K2
d.	What is Tensor? Explain the Tensorflow architecture and illustrate its mathematical operations	5	CO1	K2
6.a.	Given $A = \begin{bmatrix} -1 & 7 & 3 \\ 8 & 5 & 0 \end{bmatrix}$ and $B = \begin{bmatrix} 2 & 0 & -5 \\ -3 & 4 & -6 \end{bmatrix}$ Find the value of (1) $A*B$ (2) $2A-3B$ (3) $5A+2B$ (4) $2A+(3A*B)$	5	CO1	K4
b.	1. Calculate the compression space with dimension 1024 to 16. 2. Reconstruction with linear decoder latent vector (z)=2.0, Decoder weight=0.6 and Bias=0.2. Find the output. 3. Calculate the total number of parameter in autoencoder. Input Layer = 100 Neurons b1=20. Hidden Layer=20 Neurons b2=100.	5	CO4	K4
(OR)				
c.	Illustrate two types of supervised and unsupervised deep learning framework used for handling real-time problems	5	CO1	K3
d.	Compare the Undercomplete and Regularized Autoencoders.	5	CO4	K3
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