Course Code: 23AM5T01

BONAM VENKATA CHALAMAYYA INSTITUTE OF TECHNOLOGY & SCIENCE

(AUTONOMOUS)

III - B.Tech I-Semester Regular Examinations (BR23), November - 2025

DEEP LEARNING (AI&ML)

Time: 3 hours | Max. Marks: 70

Question Paper consists of Part-A and Part-B
Answer ALL the question in Part-A and Part-B

PART–A (10X2 = 20M)

		Marks	CO	BL
1. a)	Define a Biological Neuron and mention its main components.	(2M)	CO1	BL1
b)	What is meant by a Computational Unit in neural networks	(2M)	CO1	BL1
c)	List the difficulties in training deep neural networks.	(2M)	CO2	BL1
d)	Write the applications of autoencoders.	(2M)	CO2	BL1
e)	What is dropout in neural networks?	(2M)	CO3	BL1
f)	What is the purpose of batch normalization?	(2M)	CO3	BL1
g)	What is Backpropagation Through Time (BPTT)?	(2M)	CO4	BL1
h)	Define Gibbs Sampling in one line.	(2M)	CO4	BL1
i)	Expand GPT.	(2M)	CO5	BL1
j)	What is self-attention in Transformers?	(2M)	CO5	BL1

PART–B (5X10 = 50M)

2.	Explain the Perceptron Learning Algorithm step-by-step with a suitable example.	10(M)	CO1	BL2
	(OR)			
3.	Describe in detail the McCulloch–Pitts Neuron Model. Illustrate how it performs basic logical functions (AND, OR).	10(M)	CO1	BL2

4	Explain the architecture and working of a Multilayer Perceptron with neat diagram	10(M)	CO2	BL2
	(OR)			
5	Explain the architecture, training, and applications of Autoencoders.	10(M)	CO2	BL2

6	Explain Adagrad, Adadelta, RMSProp, and Adam optimizers	10(M)	CO3	BL2
	(OR)			
7	Discuss the saddle point problem in neural networks with diagrammatic explanation.	10(M)	CO3	BL2

8.	Discuss the architectures of LeNet and AlexNet in CNNs.	10(M)	CO4	BL2

	(OR)			
9.	Explain RBM and DBM with neat sketches.	10(M)	CO4	BL2

10.	Explain the architecture and working of Variational Autoencoders (VAEs).	10(M)	CO5	BL2
	(OR)			
11.	Discuss the applications of GPT in Vision, NLP, and Speech.	10(M)	CO5	BL2

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