GYANMANJARI INNOVATIVE UNIVERSITY

GYANMANJARI INSTITUTE OF TECHNOLOGY

M. Tech.-End Semester Examination (ESE)- Summer-2026

Enrollment No.: _
Subject Code: METAI12510
Subject Name: Deep Learning
Time: 10:30 AM to 01:30 PM

Date: 16-05-2026
Semester: 02
Total Marks: 100

Instructions:

1. **Question No. 1 is compulsory.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	(a)	Explain the four branches of Machine Learning with suitable examples.	10
	(b)	Describe tensor operations and gradient-based optimization in neural networks.	10
Q.2	(a)	Explain applications of CNN in image classification, object detection, and segmentation.	10
		OR	
	(a)	Explain recent trends in Deep Learning methodologies.	10
	(b)	Design a bidirectional RNN model for sequence prediction and justify its advantages.	10
		OR	
	(b)	Describe the working of RNN, LSTM, and GRU layers.	10
Q.3	(a)	Analyze overfitting and underfitting with graphical representation and suggest techniques to overcome them.	10
	(b)	Explain the convolution operation and max-pooling operation with diagrams.	10
		OR	
Q.3	(a)	Explain binary and multiclass classification problems using neural networks with suitable examples.	10
	(b)	Discuss the importance of data augmentation and preprocessing in training CNN models.	10
Q.4	(a)	Design a neural network model using Keras for predicting house prices and justify your architecture.	10
	(b)	Analyze applications of RNN in NLP tasks such as sentiment analysis, machine translation, and speech recognition.	10
		OR	
Q.4	(a)	Explain one-hot encoding and word embeddings with examples.	10
	(b)	Discuss data preprocessing, feature engineering, and feature learning in ML.	10
Q.5	(a)	Explain the basic structure (anatomy) of a neural network with diagram.	10
	(b)	Design a CNN architecture for image classification on a small dataset and explain each layer.	10
		OR	
Q.5	(a)	Analyze the temperature forecasting problem using RNN and compare it with a baseline model.	10
	(b)	Describe the universal workflow of Machine Learning with a neat diagram.	10