Total No. of Printed Pages: 2

PRN No.	

PAPER CODE	U325-2114 C [ES

(AY:2024-25) May 2025 (ENDSEM) EXAM

TY (SEMESTER - II)

COURSE NAME: Artificial Intelligence and Machine Learning

Branch: MECHANICAL ENGINEERING

COURSE CODE: MEUA32204R1C

(T.Y PATTERN 2020 R1)

Time: [1Hr 30 Min] **[Max. Marks: 40]**

(*) Instructions to candidates:

1) **Figures to the right indicate full marks. Use of scientific calculator is allowed**
2) **Use suitable data wherever required**
3) **All questions are compulsory. Solve any two sub question each from Questions 1 and 2**
4) **Solve any one sub question (2 marks) from Questions 3 ,4 ,5 and 6 and sub question of 4 marks is compulsory from questions 3,4,5,and 6**

Q. No.	Question Description	Max. Marks	CO mapped	BT Level
Q.1	a) How can Artificial Intelligence help in the field of Mechanical Engineering? Give two practical examples.	[4]	CO1	Understand
	b) Describe in brief Supervised, Unsupervised, and Reinforcement Learning? Explain with one example of each.	[4]	CO1	Understand
	c) Describe basic components of AI with examples: Reasoning, problem solving, Knowledge representation, Planning, Learning, Perception, Motion and manipulation	[4]	CO1	Understand
Q2	a) What is the difference between feature extraction and feature selection? Explain with examples.	[4]	CO2	Understand
	b) How does Principal Component Analysis (PCA) help in reducing dimensionality?	[4]	CO2	Understand
	c) Describe the difference between Greedy Forward Selection and Greedy Backward Elimination in feature selection.	[4]	CO2	Understand
Q3	a) What is the main difference between classification and regression problems?	[2]	CO3	Understand
	OR			
	b) Name any two classification algorithms and write one line about each.	[2]	CO3	Understand

	c) Explain the architecture of a basic CNN with a neat diagram.	[4]	CO3	Understand
Q4	a) What is the difference between training and testing data in machine learning?	[2]	CO4	Understand
	OR			
	b) What does a confusion matrix show in classification problems?	[2]	CO4	Understand
	c) A student used 90% training and 10% testing data and got high accuracy. Later, accuracy dropped on real data. Analyze why this happened and suggest a better approach.	[4]	CO4	Analyze
Q.5	a) What is reinforcement learning in machine learning?	[2]	CO5	Understand
	OR			
	b) Define Positive and Negative Reinforcement in RL.	[2]	CO5	Understand
	c) Explain the components of a Markov Decision Process (MDP).	[4]	CO5	Analyze
Q.6	a) What is Deep Learning?	[2]	CO6	Understand
	OR			
	b) State one application of deep learning in Mechanical Engineering.	[2]	CO6	Understand
	c) Analyze the confusion matrix below and evaluate the model's performance in terms of accuracy, precision, and recall. *Confusion Matrix: TP=40, FP=10, FN=20, TN=30*	[4]	CO6	Analyze