

Code: 23ME3602

**III B.Tech - II Semester - Regular Examinations – APRIL 2026**

**ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING  
(MECHANICAL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

- 
- Note: 1. This question paper contains two Parts A and B.  
 2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.  
 3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.  
 4. All parts of Question paper must be answered in one place.

BL – Blooms Level

CO – Course Outcome

---

**PART – A**

		BL	CO
1.a)	What is an Intelligent Agent?	L1	CO1
b)	What is First Order Logic (FOL)?	L1	CO1
c)	List the difference between supervised and unsupervised learning.	L1	CO2
d)	What is underfitting?	L1	CO2
e)	What is dimensionality reduction?	L1	CO3
f)	Define clustering.	L1	CO3
g)	What are genetic operators?	L1	CO4
h)	What is an Artificial Neural Network?	L1	CO4
i)	What is boosting?	L1	CO5
j)	What is deep learning?	L1	CO5

## PART – B

			BL	CO	Max. Marks
<b>UNIT-I</b>					
2	a)	Explain the characteristics of intelligent agents with examples.	L2	CO1	5 M
	b)	Distinguish between propositional logic and first-order logic.	L2	CO1	5 M
<b>OR</b>					
3	a)	Explain the concept of rational agents and rationality.	L2	CO1	5 M
	b)	Explain the concept of Wumpus world logic.	L2	CO1	5 M
<b>UNIT-II</b>					
4	a)	Explain Support Vector Machine (SVM) and its advantages.	L2	CO2	5 M
	b)	Compare regression and classification problems with examples.	L2	CO2	5 M
<b>OR</b>					
5	a)	Illustrate Decision Trees and their working principle.	L3	CO2	7 M
	b)	Explain supervised learning with suitable examples.	L2	CO2	3 M
<b>UNIT-III</b>					
6	a)	Describe the steps of the K-means clustering algorithm.	L2	CO3	5 M

	b)	Explain dimensionality reduction and its importance.	L2	CO3	5 M
<b>OR</b>					
7		Illustrate the working principle of Principal Component Analysis.	L3	CO3	10 M
<b>UNIT-IV</b>					
8	a)	Explain the working principle of a perceptron model.	L2	CO4	5 M
	b)	Discuss genetic operators such as selection, crossover and mutation.	L2	CO4	5 M
<b>OR</b>					
9		Illustrate the Convolutional Neural Networks and their applications.	L3	CO4	10 M
<b>UNIT-V</b>					
10	a)	Explain the working of Random Forest algorithm.	L2	CO5	5 M
	b)	Summarize the working of deep auto-encoders.	L2	CO5	5 M
<b>OR</b>					
11	a)	Describe the applications of deep neural networks in real-world problems.	L2	CO5	5 M
	b)	Explain ensemble learning methods in machine learning.	L2	CO5	5 M