Reg. No.												

Question Paper Code	13790

M.E. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Second Semester

Industrial Safety Engineering

24PISPC205 - MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE FOR INDUSTRIAL SAFETY

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	Recall the significance of version space in machine learning.	2	K1	CO1
2.	Give your understanding about inductive bias.	2	K2	CO1
3.	Interpret the primary function of a perceptron in neural networks.	2	K2	CO2
4.	Infer about the word "Q" in Q-Learning.	2	K1	CO2
5.	Mention any four industrial applications of AI.	2	K1	CO3
6.	Differentiate between visual and auditory perception in AI.	2	K2	CO3
7.	Describe how psychology influences knowledge representation.	2	K2	CO4
8.	Give one example of a semantic network.	2	K1	CO4
9.	Define the term epoch in neural network training.	2	K1	CO5
10.	List two parameters commonly selected for training a neural network.	2	K1	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Explain candidate elimination algorithm and its application in concept learning.	13	K3	CO1
		OR			
	b)	Explain the process of decision tree learning with a suitable example.	13	K3	CO1
12.	a)	Explain the architecture and learning process of a multilayer perceptron.	13	K3	CO2
		OR			
	b)	Explain in detail about FOCL algorithm.	13	K3	CO2
13.	a)	Discuss the historical development of AI and its impact on modern technology.	13	K3	CO3

OR

	b)	Explain the integration of AI in game playing and reasoning. How does this integration improve AI performance in complex tasks.	*13*	*K3*	*CO3*
14.	a)	Explain in detail the role and responsibilities of a knowledge engineer in the development of expert systems. Provide real-world examples.	*13*	*K4*	*CO4*

OR

	b)	Explain about the concept of fuzzy logic and how it is applied in AI systems for decision-making under uncertainty.	*13*	*K4*	*CO4*
15.	a)	Explain the general architecture of an artificial neural network. Discuss different types of layers and neuron connectivity.	*13*	*K3*	*CO5*

OR

	b)	Explain the working of the back propagation learning algorithm step by step with appropriate mathematical expressions.	*13*	*K3*	*CO5*

PART - C (1× 15 = 15 Marks)

16.	a)	Explain the procedure of Genetic algorithm in detail and discuss how it can be implemented to optimize industrial safety systems.	*15*	*K4*	*CO2*

OR

	b)	Explain the crucial role of factory vision systems in minimizing human error and improving industrial safety.	*15*	*K4*	*CO3*