Reg. No.												

Question Paper Code	13770

M.E - DEGREE EXAMINATIONS, APRIL / MAY 2025

Second Semester

Industrial Safety Engineering

20PISPC205 – MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE FOR INDUSTRIAL SAFETY

Regulations - 2020

Duration: 3 Hours | Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks	K – Level	CO
1.	List a few of the task domains of AI.	2	K1	CO1
2.	Describe the components of a KBS.	2	K2	CO1
3.	Differentiate Informed & Uninformed search. Give examples.	2	K2	CO2
4.	Define the logic behind – Hill climbing, Best-First Search, BFS and DFS.	2	K2	CO2
5.	Mention the frame manipulation primitives.	2	K1	CO3
6.	Define forward and backward chaining. Differentiate the same.	2	K2	CO3
7.	List the types of grammars.	2	K1	CO4
8.	Give an example of a production rule.	2	K1	CO4
9.	Define Inductive Bias.	2	K2	CO5
10.	What is Explanation Based Learning? How is it useful?	2	K2	CO5

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

			Marks	K – Level	CO
11.	a)	Explain in detail the properties of Task Environments.	13	K2	CO1
		OR			
	b)	What are the steps in designing a machine learning problem?	13	K2	CO1
12.	a)	Explain how supervised learning is difficult from unsupervised learning.	13	K2	CO2
		OR			
	b)	Elaborate the steps required for selecting the right machine learning algorithm.	13	K2	CO2
13.	a)	Explain the steps involved in the knowledge Engineering process. Give an example.	13	K2	CO3

OR

	b)	Describe how the General Problem Solver (GPS) works. How did it influence modern AI planning systems.	*13*	*K2*	CO3
14.	a)	Describe Inductive Logic Programming and write FOIL algorithm for learning sets of first- order horn clauses from example.	*13*	*K2*	CO4
		OR			
	b)	Discuss on learning with hidden variables: the EM algorithm.	*13*	*K2*	CO4
15.	a)	Explain augmented grammar with examples.	*13*	*K2*	CO5
		OR			
	b)	Discuss hypothesis space search in the context of machine learning and explain why it is important, and what strategies are used for efficient search.	*13*	*K2*	CO5

PART - C (1× 15 = 15 Marks)

16.	a)	Draw the schematic of a machine translation and explain for an example problem.	*15*	*K2*	*CO6*
		OR			
	b)	Explain Types of Activation functions in details.	*15*	*K2*	*CO6*