Reg. No.												

Question Paper Code	12406

M.E. / M.Tech. - DEGREE EXAMINATIONS, NOV / DEC 2023

First Semester

M.E. - Computer Science and Engineering

(Common to Computer Science and Engineering (with Specialization in Networks)

20PCSPW101 - ADVANCED MACHINE LEARNING WITH LABORATORY

(Regulations 2020)

Duration: 3 Hours Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

		Marks, K-Level, CO
1.	Distinguish between Supervised and Unsupervised Learning.	*2,K2,CO1*
2.	Define Version Space.	*2,K1,CO1*
3.	List the benefits of Neural Network.	*2,K2,CO2*
4.	Define sampling and its types.	*2,K1,CO2*
5.	Mention some applications of Decision Trees.	*2,K2,CO3*
6.	Describe Bagging and Boosting.	*2,K1,CO3*
7.	What is Factor Analysis in Scale development?	*2,K1,CO4*
8.	Discuss the advantages and disadvantages of Locally weighted linear Regression.	*2,K2,CO4*
9.	State the use cases for Genetic Algorithm.	*2,K2,CO5*
10.	State the uses of Reinforcement Learning.	*2,K2,CO5*

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

11.	a)	(i) Explain the steps involved in designing a learning system.	*8,K2,CO1*
		(ii) List the differences between Candidate Elimination algorithm and Find-S algorithm.	*5,K2,CO1*
		OR	
	b)	Explain how Concept learning can be viewed as a Search problem with the help of General to specific ordering of Hypotheses.	*13,K2,CO1*
12.	a)	Write notes on the stochastic gradient descent version of the BACKPROPAGATION algorithm in feed forward networks with an example.	*13,K2,CO2*
		OR	
	b)	(i) What are Radial Basis Function Neural Networks? Explain in detail.	*7,K2,CO2*
		(ii) Compare RBF with traditional Neural Networks.	*6,K2,CO2*

13. a) Explain in detail about Classification and Regression Trees. (CART) *13,K3,CO3*

OR

b) Discuss in detail on how different types of classifiers are combined in different ways. *13,K2,CO3*

14. a) Explain in detail Principal Component Analysis for Dimension Reduction. *13,K2,CO4*

OR

b) (i) Describe Locally Linear Embedding algorithm. *8,K2,CO4*

(ii) Explain Kernel PCA. *5,K2,CO4*

15. a) (i) Write a short note on Hidden Markov Model. *8,K2,CO5*

(ii) Write Brief notes on Evolutionary Algorithms. *5,K2,CO5*

OR

b) Explain the significance of Hidden Markov models in machine learning. *13,K2,CO5*

PART - C (1 × 15 = 15 Marks)

16. a) (i) Elaborate on Reinforcement Learning. *10,K3,CO5*

(ii) Compare Reinforcement learning with inverse Reinforcement learning. *5,K3,CO5*

OR

b) (i) Discuss in detail about Least Square Optimization with examples. *8,K3,CO5*

(ii) Explain Genetic Algorithms with relevant examples. *7,K3,CO5*