Reg.No.:												

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 50051

M.E. / M.Tech. DEGREE END-SEMESTER EXAMINATIONS – FEB. 2025
First Semester
Computer Science and Engineering
P23CS102 – MACHINE LEARNING TECHNIQUES
(Regulation 2023)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	List out four features of Machine Learning.	2	K1	CO1
2.	Distinguish between Bagging and Boosting.	2	K2	CO1
3.	Outline the philosophy of Radial Basis Function (RBF) and its application.	2	K2	CO2
4.	Justify the necessity for dimensionality reduction in the context of machine learning.	2	K2	CO2
5.	Identify the principle in – Hidden Markov Models.	2	K2	CO3
6.	List various machine learning tools.	2	K1	CO3
7.	How is reinforcement learning different from unsupervised learning?	2	K2	CO4
8.	List the importance of Q- learning.	2	K2	CO4
9.	How to use Conditional Random Fields (CRF) for information extraction?	2	K2	CO5
10.	List out the techniques to learn from streaming data?	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.		Questions	Marks	KL	CO
11. a)	i.	Discuss the various issues in Machine Learning.	5	K2	CO1

	ii.	List the advantages of SVM and how optimal Hyperplane differs from Hyperplane.	8	K2	CO1
		(OR)			
	b)	Explain in detail about the process of constructing CART (Classification and Regression Tree) with a suitable example.	13	K2	CO1
12.	a)	Explain in detail about the K-nearest Neighbor algorithm with a suitable example.	13	K1	CO2
		(OR)			
	b)	Elaborate the Principal Component Analysis (PCA) algorithm that reduces the dataset dimensionality with retention of information. Explain how PCA works.	13	K2	CO2
13.	a)	What do you mean by inference in Bayesian networks? Explain in detail about inference in Bayesian networks with a suitable example.	13	K2	CO3
		(OR)			
	b)	Explain in detail about the forward algorithm and viterbi decoder for a Hidden Markov Model.	13	K2	CO3
14.	a)	Elaborate on the various issues like control learning, control policies, Q learning and convergence in reinforcement learning with a suitable example.	13	K2	CO4
		(OR)			
	b)	Explain in detail about the Temporal Difference Learning model with a suitable example.	13	K2	CO4
15.	a)	Explain in detail about Recommendation Systems with suitable examples.	13	K2	CO5
		(OR)			
	b)	i. Explain in detail about the need for active learning in machine learning.	5	K2	CO5
		ii. How are deep learning and machine learning related? Explain in detail about regularization in deep learning.	8	K2	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.		Questions	Marks	KL	CO
16.	a)	Discuss Reinforcement Learning and its elements with an appropriate example.	15	K2	CO4
		(OR)			
	b)	Discuss Graphical Models and their classifications with suitable examples.	15	K2	CO3