

THE KAVERY ENGINEERING COLLEGE*(An Autonomous Institution)***UG/PG DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2026*****Second Semester******Computer Science and Engineering*****PCST2423 – MACHINE LEARNING*****Regulations - 2024******Duration: 3 Hrs.******Maximum: 100 Marks******PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)***

Q.No	Questions	BLT	CO	Marks
1.	Write the formula for Euclidean Distance.	L1	1	2
2.	Compare entropy and information gain.	L2	1	2
3.	How can you avoid overfitting?	L2	2	2
4.	When to use Lasso regression?	L1	2	2
5.	Outline the challenges of clustering algorithm.	L2	3	2
6.	Justify the necessity for dimensionality reduction in the context of machine learning	L2	3	2
7.	List the need of probabilistic reasoning in AI	L1	4	2
8.	How Naïve Bayes used in classification?	L2	4	2
9.	Draw the structure of biological neuron.	L1	5	2
10.	List out the applications of Deep Learning.	L1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No	Questions	BLT	CO	Marks
11.	a i Illustrate the various application of Machine Learning.	L2	1	8
	ii Explain in detail about Stochastic Gradient Descent.	L2	1	8
	Or			
	b i Explain the types of Probability with suitable example.	L2	1	8
	ii Illustrate the supervised learning structure.	L2	1	8
12.	a i Apply the Linear Support Vector Machine (SVM) using the provided dataset. Positive labelled data points	L3	2	8

$$\left\{ \begin{pmatrix} 3 \\ 1 \end{pmatrix}, \begin{pmatrix} 3 \\ -1 \end{pmatrix}, \begin{pmatrix} 6 \\ 1 \end{pmatrix}, \begin{pmatrix} 6 \\ -1 \end{pmatrix} \right\}$$

Negative labelled data points

$$\left\{ \begin{pmatrix} 1 \\ 0 \end{pmatrix}, \begin{pmatrix} 0 \\ 1 \end{pmatrix}, \begin{pmatrix} 0 \\ -1 \end{pmatrix}, \begin{pmatrix} -1 \\ 0 \end{pmatrix} \right\}$$

	ii	Identify the different cross validation methods with suitable examples.	L3	2	8
		Or			
	b i	Apply the Steps to calculate the Line of Best fit in Least squared method.	L3	2	8
	ii	Build the Ensembler learning model with an example.	L3	2	8
13.	a i	Analyze the various approaches to implement Reinforcement learning.	L4	3	8
	ii	Examine the workflow of Amazon's recommendation engine from data collection to recommendation delivery. How does Amazon process large-scale user data efficiently and update recommendations in real-time?	L4	3	8
		Or			
	b i	Analyze if hierarchical clustering considered as an unsupervised learning method? Provide your answer with justification.	L4	3	8
	ii	Examine the K Mean algorithm with K = Means algorithm over the data (185, 72), (170, 56), (168, 60), (179, 68), (182, 72), (188,77) up to two iterations and show the clusters. Initially choose first two objects as initial centroids.	L4	3	8
14.	a i	Illustrate maximum Likelihood estimation with mean and variance.	L2	4	8
	ii	Explain in detail about the Steps of Apriori algorithm.	L2	4	8
		Or			
	b i	Explain the Bayesian network with an example.	L2	4	8
	ii	Illustrate any four real-world examples where the hidden Markov models are used.	L2	4	8
15.	a	Construct a single layer neural network for implementing OR, NOT gates.	L4	5	16
		Or			
	b	Identify the significance of activation functions in artificial neural networks with examples	L4	5	16
