

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: 50001**

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – NOV. / DEC. 2024

Seventh Semester

Computer Science and Engineering  
U19CS730 – MACHINE LEARNING  
(Regulation 2019)

Time: Three Hours

Maximum: 100 Marks

Answer ALL the questions

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

**PART – A**

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	What kind of problems can be solved using Learning Algorithms?	2	K1	CO1
2.	What is hypothesis? Write the use of hypothesis in Machine Learning.	2	K1	CO1
3.	What are the different types of Machine Learning Algorithms? Give one name of well-known Machine Learning Algorithm in each type.	2	K2	CO2
4.	What is the difference between classification and regression?	2	K2	CO2
5.	Give the difference between supervised and unsupervised Machine Learning Algorithms. When will you use which type?	2	K2	CO3
6.	What are the performance metrics for unsupervised learning algorithms?	2	K1	CO3
7.	Define Markov Decision Process.	2	K1	CO4
8.	Are SARSA and Q-Learning Model free and on-policy Algorithms?	2	K2	CO4
9.	Will a Genetic Algorithm always give an optimal solution? Justify your answer.	2	K3	CO5
10.	What is a fitness function? Give an example.	2	K1	CO5

PART – B

(5 x 13 = 65 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Discuss about Inductive bias with an example.	13	K2	CO1
	(OR)			
b)	Write Candidate Elimination Algorithm and explain the algorithm with an example.	13	K2	CO1
12. a)	How will you train and test Random Forest Model?	13	K2	CO2
	(OR)			
b)	Discuss in brief about a Bayes optimal classifier. Explain how training and testing will be done for the classifier.	13	K2	CO2
13. a)	Give an example for a K Nearest Neighbor Classifier, and explain how it is trained.	13	K3	CO3
	(OR)			
b)	Explain about Principle Component Analysis, and write an application of it.	13	K3	CO3
14. a)	Write the SARSA algorithm and explain its working.	13	K2	CO4
	(OR)			
b)	Write the Q-Learning Algorithm, and trace the algorithm with a numerical example.	13	K2	CO4
15. a)	Write the steps of Genetic Algorithms, and explain it with a numerical example.	13	K3	CO5
	(OR)			
b)	Write sequential covering algorithm, and discuss about time complexity of the algorithm.	13	K3	CO5

PART – C

(1 x 15 = 15 Marks)

Q.No.	Questions	Marks	KL	CO
16. a)	Given the Blood Glucose values 103, 105, 107, 109, 111, 113, 115 at 1, 2, 3, 4, 5, 6, 7 minutes after breakfast respectively. Predict the blood Glucose 30 minutes after breakfast, assuming the blood glucose level changes linearly over one hour period after breakfast, using any machine learning algorithm.	15	K3	CO2
	(OR)			

- b) You are given 15 points in the Cartesian coordinate system as follows. 15 K3 CO3

Point Coordinates

A1	(2,10)
A2	(2,6)
A3	(11,11)
A4	(6,9)
A5	(6,4)
A6	(1,2)
A7	(5,10)
A8	(4,9)
A9	(10,12)
A10	(7,5)
A11	(9,11)
A12	(4,6)
A13	(3,10)
A14	(3,8)
A15	(6,11)

You are also given the information that you need to make 3 clusters. Apply K-means algorithm on the data and give the clusters.

---