

THE KAVERY ENGINEERING COLLEGE
(An Autonomous Institution)

MCA DEGREE END SEMESTER THEORY EXAMINATIONS, NOV /DEC 2024

Third Semester

Master of Computer Applications

MC4301 – Machine Learning

Regulations - 2021

Duration : 3 Hrs

Maximum : 100 Marks

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
1.	What is machine learning?	RE	1	2
2.	List the types of data.	RE	1	2
3.	How is model selection done?	RE	2	2
4.	Explain the benefits and limitations of feature transformation.	UN	2	2
5.	Define Baye's rule.	RE	3	2
6.	What is the principle of least square error?	RE	3	2
7.	What is cost function in machine learning? What are its types?	RE	4	2
8.	Which classifiers do we use in multiclass classification? When do we use them?	RE	4	2
9.	Define pruning.	RE	5	2
10.	Define loss function. What does it predict?	RE1	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*13 = 65)

<i>Q.No</i>	<i>Questions</i>	<i>BLT</i>	<i>CO</i>	<i>Marks</i>
11.	a Explain the various types of machine learning algorithms and give example for each. List the common issues in machine learning.	UN	1	13
	Or			
	b Why do we need data preprocessing? Explain the various pre-processing steps to increases the accuracy and efficiency of machine learning model.	UN	1	13
12.	a Utilize the steps for model selection and explain how does that reflect in training model to determine best solution.	AP	2	13
	Or			
	b What is feature selection? Why is it needed? Explain the different approaches of feature selection in detail?	AP	2	13
13.	a Explain in detail the principle and process of maximum likelihood algorithm.	UN	3	13
	Or			
	b Outline the principle of Bayesian belief network and state the EM algorithm.	UN	3	13

14. a Explain the basic principles and applications of logistics regression. EV 4 13
- Or
- b Explain the steps to train a neural network with a backpropagation algorithm. EV 4 13

15. a Consider a 2-class (tasty or non-tasty) problem with the following training data set. Find the root node of the decision tree using entropy measure to classify the pattern cook = Jansi, health status = bad, cuisine = continental. AN 5 13

Cook	Health Status	Cuisine	Class
Jansi	Bad	Indian	Tasty
Jansi	Good	Continental	Non Tasty
Jersi	Bad	Indian	Tasty
Jersi	Bad	Continental	Non Tasty
Jersi	Good	Indian	Tasty
Jersi	Good	Continental	Non Tasty

Or

- b Analyze in detail about ensemble learning and list the pros and cons of boosting and bagging algorithm. AN 5 13

*PART - C (Marks 1*15 = 15)*

Q.No	Questions		BLT	CO	Marks
16.	a i	Explain K-Nearest neighbors algorithm with suitable example.	EV	5	8
	ii	Compare decision tree and random forest algorithm.	EV	5	7
Or					
	b	Explain the significance of activation functions. What are the different activation functions, its derivation and its corresponding graph?	EV	4	15