Reg. No. : | | | | | | | | | | |

Question Paper Code: 99733

B.E./B.Tech. DEGREE EXAMINATION, NOV 2022

Elective

Mechanical Engineering

19UME933 – MACHINE LEARNING

(Regulations 2019)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Application of machine learning methods to large databases is called CO1- U

   (a) Data mining (b) Artificial intelligence (c) Big data computing (d) Internet of Things

2. Which of the following is the best machine learning method? CO1- U

   (a) Scalable (b) Accuracy (c) Fast (d) All of the above

3. Regression models a target prediction value based on _____ CO1- U

   (a) Dependent variable (b) Independent variable

   (c) Independent value (d) Dependent value

4. If the cost function is convex, then it converges to a _____ CO1- U

   (a) Local minimum (b) Local maximum (c) Global minimum (d) Global maximum

5. In KNN algorithm, to find out the nearest neighbors _____ distance is used. CO1- U

   (a) Polar (b) Spatial (c) Euclidian (d) Nautical

6. What is called the average squared difference between classifier predicted output and actual output? CO1- U

   (a) Mean relative error (b) Mean squared error

   (c) Mean absolute error (d) Root mean squared error

7. _____ is an example of sequential ensemble model CO4- U

(a) AdaBoost (b) Bootstrapping (c) Random forest (d) Decision tree

8. When Increase in the ensemble size will leads to _____ CO4- U

(a) Low Storage (b) High Error Rate (c) Low Error Rate (d) Less Time

9. The Modular neural network (MNN) is a neural network that has _____ main branches. CO5- U

(a) 4 (b) 2 (c) 6 (d) 8

10. The network that involves backward links from output to the input and hidden layers is called as ____ CO5- U

(a) Self organizing maps (b) Perceptrons

(c) Recurrent neural network (d) Multi layered perceptron

PART – B (5 x 6= 30 Marks)

11. Classify about parametric machine learning algorithm and nonparametric machine learning algorithm. CO1- U

12. Explain about the Logistic Function. CO1- U

13. Explain the Support Vector Machine algorithm. CO1- U

14. Explain about bootstrap aggregation (bagging) method. CO3- App

15. Using sigmoid function for $x_1 = 0.1$ and want to predict the output. The network has optimized weight and bias where $w_1 = 0.15$ & $b_1 = 0.4$. CO3- App

PART – C (5 x 10= 50 Marks)

16. (a) Explain about the parametric machine learning algorithm and how is it different from a nonparametric machine learning algorithm? CO1- U (10)

Or

(b) Explain the term good fit, over fit and under fit in machine learning with suitable examples. CO1- U (10)

17. (a) Using the following Data Set to find B_0, B_1 and predicted Y values using Linear Regression Algorithm. CO2-App (10)

X	1	2	4	3	5
Y	1	3	3	2	5

Or

(b) Explain the step by step procedure to solve a Data Set problem to minimize the error between the predicted values (Yp) and actual values (Y) using Gradient Descent algorithm. CO2-App (10)

18. (a) A mobile company conducted a survey about the selection of Mobile phones and the survey results are given below. Predict the choices of the customers using Naive Bayes Algorithm. CO2- App (10)

Features	Appearance	Class
Good	Good	Buy
Moderate	Moderate	Buy
Good	Good	Buy
Good	Good	Buy
Good	Good	Buy
Moderate	Moderate	Not to buy
Moderate	Moderate	Not to buy
Good	Good	Not to buy
Moderate	Moderate	Not to buy
Moderate	Moderate	Not to buy

Or

(b) Use the KNN Algorithm to predict the new instance value for the given dataset. CO2- App (10)

Find the new instance prediction for the name Angelina, Age 5 and Gender Female.

Name	Age	Gender	Sport
Ajay	32	M	Football
Mark	40	M	Neither
Sara	16	F	Cricket
Zaira	34	F	Cricket
Sachin	55	M	Neither
Rahul	40	M	Cricket
Pooja	20	F	Neither
Smith	15	M	Cricket
Laxmi	55	F	Football
Michael	15	M	Football

19.	(a)	Explain in detail about the Random Forest Algorithm with an example.	CO3- App	(10)
		Or		
	(b)	Explain in detail about the AdaBoost model with an example.	CO3- App	(10)
20.	(a)	Explain in detail about the Convolutional neural network (CNN) model.	CO3- App	(10)
		Or		
	(b)	Explain about Deep feed forward networks or feed forward neural networks or multilayer perceptron (MLP)	CO3- App	(10)