Reg. No.															

B.Tech. DEGREE EXAMINATION, NOVEMBER 2023

Sixth Semester

18ECE307J – APPLIED MACHINE LEARNING

(For the candidates admitted from the academic year 2020-2021 to 2021-2022)

Note:

(i) **Part - A** should be answered in OMR sheet within first 40 minutes and OMR sheet should be handed over to hall invigilator at the end of 40th minute.

(ii) **Part - B & Part - C** should be answered in answer booklet.

Time: 3 hours Max. Marks: 100

PART – A (20 × 1 = 20 Marks)

Answer **ALL** Questions

	Marks	BL	CO	PO
1. Blood glucose level is depends on calorie intake and physical activity. For predict blood glucose level _____ (A) Simple regression can be used (B) Two variable regression can be used (C) Three variable regression can be used (D) Four variable regression can be used	1	1	1	1
2. Reinforcement learning is _____ (A) Supervised Learning (B) Un supervised Learning (C) Moderate between supervised and unsupervised Learning (D) Evolutionary Learning	1	2	1	1
3. _____ is the machine learning algorithms that can be used with unlabeled data. (A) Regression Algorithm (B) Clustering Algorithm (C) Instance – based algorithms (D) Reinforcement Algorithms	1	1	1	1
4. What is called the average squared difference between classifier predicted output and actual output? (A) Mean relative error (B) Mean squared error (C) Mean absolute error (D) Root mean square error	1	1	1	1
5. Decision tree algorithm falls under the category of (A) Unsupervised learning algorithm (B) Reinforcement learning algorithm (C) Supervised learning algorithm (D) Prove to errors in classification problems with many class	1	2	2	1
6. _____ is the measure of uncertainity of a random variable, it characterizes the impurity of an arbitrary collection of examples (A) Information Gain (B) Mini Index (C) Entropy (D) Mini Value	1	1	2	1

7.	In pruning method _____	1	1	2	1
	(A) Twins are used for pruning (B) The twins with least information gain is used for pruning				
	(C) The twins with most information gain is used for pruning (D) We can select any node for pruning				
8.	Multi layer perception _____	1	2	2	1
	(A) Cannot solve non-linear problems (B) Has only one hidden layer always				
	(C) Has linear perceptron as building block (D) Every layer including output layer has bias neuron				
9.	Chain effect exist in	1	1	3	1
	(A) Single link method (B) Complete link method				
	(C) Centroid method (D) Average link method				
10.	Learning vector quantization is based on _____	1	1	3	1
	(A) Supervised Learning (B) Un Supervised Learning				
	(C) Reinforcement Learning (D) Semi Supervised Learning				
11.	Which is true for cluster analysis?	1	2	3	1
	(A) Intra-cluster distance to be minimized (B) Intra – cluster distance to be maximized				
	(C) Inter cluster distance to be minimized (D) Both Intra and inter cluster distance to be maximized				
12.	The main application of SOM is	1	1	3	1
	(A) Regression (B) Classification				
	(C) Reducing the dimension of data via feature extraction (D) Time series prediction				
13.	Where does the Bayes rule can be used?	1	1	4	1
	(A) Solving Queries (B) Increasing Complexity				
	(C) Decreasing Complexity (D) Answering Probabilistic Query				
14.	How the components of the Bayesian networks can be described?	1	1	4	1
	(A) Locally Structured (B) Fully Structured				
	(C) Partial Structured (D) Globally Structured				
15.	The CNN _____ than conventional feed forward Neural Networks	1	2	4	1
	(A) Reduces the weight allocation in the hidden layers (B) Uses more number of hidden layers				
	(C) Uses more number of nodes in hidden layers (D) Considers entire input data				
16.	Which one of the following is a blind search?	1	1	4	1
	(A) Depth – search first (B) Best – first search				
	(C) Depth – first search (D) Best – search first				

17.	_____ takes good string in to the new population (A) Tournament (B) Niching (C) Elitism (D) Fitness Sharing	1	1	5	1
18.	Changing any value of chromosome at randomly is called _____. (A) Cross over (B) Mutation (C) Fitness (D) Offspring Selection	1	1	5	1
19.	Speech recognition is the process of converting (A) Text to speech signal (B) Speech to text signal (C) Artificial Reproduction human speech (D) Sign to speech signal	1	1	5	1
20.	Which one of the following can be considered as the class of computer threats? (A) DOS attack (B) Phishing (C) Soliciting (D) Stalking	1	2	5	1

PART – B (5 × 4 = 20 Marks)

Answer **ANY FIVE** Questions

		Marks	BL	CO	PO
21.	Build the Machine Learning Framework.	4	3	1	3
22.	Differentiate underfitting and over fitting learning curve.	4	2	1	1
23.	How does CART solve the regression problems?	4	2	2	1
24.	Identify the challenges of clustering algorithm.	4	3	3	3
25.	What is in K – means algorithm? How it is selected?	4	2	3	1
26.	What are the Bayesian belief nets? Where are they used?	4	2	4	1
27.	Write short notes on: (i) Crossover (ii) Mutation	4	2	5	1

PART – C (5 × 12 = 60 Marks)

Answer **ALL** Questions

		Marks	BL	CO	PO
28. a.	Given the confusion matrix	12	3	1	2

	Actual Win	Actual Loss	
Predicted Win	85	4	89
Predicted Loss	2	9	11
	87	13	

For the above data, calculate the

(i) Sensitivity
(ii) Specificity
(iii) True Positive
(iv) True Negative

(OR)

b. Outline the perception algorithm. 12 4 1 3

29. a. Illustrate with an example, how classification and regression can be done using MLP. 12 4 2 3

(OR)

b. Calculate the Mini index, Entropy and information gain of the feature "Classification" from the below table. 12 3 2 2

S.No	Classification	Hour of Practice	Pass the Quiz
0	Freshman	>2h	Yes
1	Freshman	>2h	Yes
2	Sophomore	<2h	Yes
3	Junior	<2h	Yes
4	Freshman	>2h	No
5	Sophomore	<2h	No

30. a. Predict the cluster tree using single link method for the following data. 12 3 3 2

δ	B	C	D	E
A	1	3	2	4
B		3	2	3
C			1	3
D				5

(OR)

b. Sketch the architecture of KSOM and analyze the three competitive learning process. 12 4 3 3

31. a. For the below frequency table of sample weather dataset. 12 3 4 2

		Play Golf	
		Yes	No
Outlook	Sunny	3	2
	Overcast	4	0
	Rainy	2	3

Calculate

i. Conditional Probability P(Sunny/Yes)
ii. Conditional Probability P (Over cast/Yes)
iii. Conditional Probability P (Rainy/No)

(OR)

b. Examine the reinforcement learning process with an example. 12 4 4 3

32. a. Analyze the genetic learning algorithm with Knapsack Problem. 12 4 5 3

(OR)

b. Illustrate the application of ML in speech emotion recognition. 12 4 5 3

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