B.Tech. DEGREE EXAMINATION, NOVEMBER 2022
Sixth/ Seventh Semester

18CSE392T – MACHINE LEARNING – I
(For the candidates admitted from the academic year 2018-2019 to 2019-2020)

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** should be answered in answer booklet.

Time: 2½ Hours   Max. Marks: 75

PART – A (25 × 1 = 25 Marks)
Answer **ALL** Questions

	Marks	BL	CO	PO

1. An alternative name for an output attribute is _____. [1 1 1 1]
   (A) Predictive variable   (B) Independent variable
   (C) Estimated variable   (D) Dependent variable

2. Identify the type of learning in which labelled training data is used [1 1 1 1]
   (A) Semi unsupervised learning   (B) Supervised learning
   (C) Reinforcement learning   (D) Unsupervised learning

3. Predicting whether a tumor is malignant or benign is an example of _____. [1 2 1 1]
   (A) Unsupervised learning   (B) Supervised regression problem
   (C) Supervised classification problem   (D) Categorical attribute

4. Predicting tomorrow's stock market price based on current market conditions and other possible information is a _____ problem. [1 2 1 1]
   (A) Classification   (B) Clustering
   (C) Regression   (D) Binary

5. If we develop a 100% accurate algorithm on training set then the algorithm might not work well for new dataset because _____. [1 2 1 1]
   (A) Algorithm is over fitting over training set   (B) Algorithm is under fitting over training set
   (C) Algorithm is over fitting over test set   (D) Algorithm is under fitting over test set

6. In dataset loading, the variables of data are called its _____. [1 2 2 1]
   (A) Response   (B) Features
   (C) Target   (D) Vector

7. Identify the correct sentences among below related to handle missing or corrupted data in a dataset. [1 2 2 1]
   (i)   Drop missing rows or columns
   (ii) Replace missing values with mean/ median/ mode
   (iii) Assign a unique category to missing value
   (A) (i) and (ii)   (B) (ii) only
   (C) (iii) only   (D) (i), (ii) (iii)

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phenomenon in a decision tree   that fits the data

PART – B (5 × 10 = 50 Marks)
Answer **ALL** Questions

	Marks	BL	CO	PO

26. a.i. What is machine learning? Explain different perspectives and issues in machine learning. [5 2 1 1]

   ii. Distinguish between over fitting and under fitting. [5 2 1 1]

   (OR)

   b. Describe error and noise in detail. Also describe how error and noise can be handled? [10 3 1 1]

27. a. Explain in detail about training data, testing data and validation data with example. [10 3 2 1]

   (OR)

   b. What is the use of performance metrics? Explain any six performance metrics with appropriate example. [10 2 2 1]

28. a. Explain the maximum likelihood estimation with suitable example. [10 2 3 1]

   (OR)

   b. Explain in detail about the k-nearest neighbour classification algorithm with example. [10 2 3 1]

29. a. Explain the working of divisive clustering with example. [10 3 4 1]

   (OR)

   b. Explain the K-medoids clustering algorithm with an example. [10 3 4 1]

30. a. What are decision tree and decision tree learning? Explain the representation of the decision tree with an example. [10 3 5 1]

   (OR)

   b. What is perceptron in machine learning? Explain the basic components of perceptron. [10 2 5 1]

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8. Which of the following cross validation versions may not be suitable for very large, datasets with hundreds of thousands of samples? 1 2 2 1
   - (A) k-fold cross-validation
   - (B) Leave-one-out cross-validation
   - (C) Hold out method
   - (D) Matrix method

9. k-fold cross-validation is _____. 1 1 3 1
   - (A) Linear in k
   - (B) Quadratic in k
   - (C) Cubic in k
   - (D) Exponential in k

10. Multiple linear regression is a _____ type of statistical analysis. 1 1 2 1
    - (A) Univariate
    - (B) Bivariate
    - (C) Multivariate
    - (D) Hierarchical

11. What is the penalty term for the ridge regression? 1 1 3 1
    - (A) The square of the magnitude of the coefficients
    - (B) The square root of the magnitude of the coefficients
    - (C) The absolute sum of the coefficients
    - (D) The sum of the coefficients

12. Once all positions in the sequence alignment have been examined, the likelihood given by each column in the alignment for each tree are _____ to give the likelihood of the tree 1 2 3 1
    - (A) Multiplied
    - (B) Added
    - (C) Divided
    - (D) Squared

13. When uses PCA? 1 2 3 1
    - (A) Every time before uses a machine learning algorithm
    - (B) You want to find latent features and reduce dimensionality
    - (C) When my data is small and with a few features
    - (D) When I have a over fit case

14. What do you mean by generalization error in terms of the SVM? 1 1 3 1
    - (A) How far the hyper plane is from the support vecotrs
    - (B) How accurately the SVM can predict outcomes for unseen data
    - (C) The threshold amount of error in an SVM
    - (D) The amount of error in an SVM

15. Which of the following options would you more likely to consider iterating SVM next time? 1 2 3 1
    - (A) You want to increase your data points
    - (B) You want to decrease your data points
    - (C) You will try to calculate more variables
    - (D) You will try to reduce the features

16. What is the minimum number of variables/ features required to perform clustering? 1 1 4 1
    - (A) 0
    - (B) 1
    - (C) 2
    - (D) 3

17. Select appropriate option which describes the single linkage method 1 2 4 1
    - (A) The distance between two clusters is defined as the average distance between all the points in each cluster
    - (B) The distance between two clusters is defined as the distance between the centroids of the clusters
    - (C) The distance between two clusters is defined as the longest distance between two points in each cluster
    - (D) The distance between two clusters is defined as the shortest distance between two points in each cluster

18. Which of the following clustering requires merging approach? 1 1 4 1
    - (A) Partitional
    - (B) Hierarchical
    - (C) Naive Bayes
    - (D) Agglomerative

19. k-means clustering aims to partition n observations into k clusters in which each observation belongs to the cluster with the nearest _____. 1 2 4 1
    - (A) Median
    - (B) Mode
    - (C) Mean
    - (D) Sum

20. Chance nodes are represented by _____. 1 1 4 1
    - (A) Disks
    - (B) Squares
    - (C) Circles
    - (D) Triangles

21. Which is needed by k-means clustering? 1 1 5 1
    - (i) Defined distance metric
    - (ii) Number of clusters
    - (iii) Initial guess as to cluster centroids
    - (A) (i) and (ii)
    - (B) (i) and (iii)
    - (C) (ii) and (iii)
    - (D) (i), (ii) and (iii)

22. The target attributes indicates the value of? 1 1 5 1
    - (A) Leaf node
    - (B) Decision node
    - (C) Path
    - (D) Arc/edge

23. The _____ denotes the entire population or sample and it further divides into two or more homogeneous sets. 1 1 5 1
    - (A) Leaf node
    - (B) Terminal node
    - (C) Root node
    - (D) Stem node

24. In perceptron learning, what happens when input vector is correctly classified? 1 1 5 1
    - (A) Small adjustments in weight is done
    - (B) Large adjustments in weight is done
    - (C) No adjustments in weight is done
    - (D) Weight adjustments doesn't depend on classification of input vector

25. Which of the following is not an inductive bias in a decision tree? 1 1 5 1
    - (A) It prefers longer tree over shorter tree
    - (B) Trees that place nodes near the root with high information gain are preferred
    - (C) Over fitting is a natural
    - (D) Prefer the shortest hypothesis