Code: **21P03601** **SR21** **SET-1**

SRINIVASA INSTITUTE OF ENGINEERING AND TECHNOLOGY

UGC – Autonomous Institution

III B.Tech II Semester II MID Examinations, MAY– 2025

ARTIFICIAL INTELLIGENCE & MACHINE LEARNING

MECH

Time: **20 Mins**	Max. Marks:**20**			Date: **01-05-2025**
Roll No:	Sign of the Student:			Marks Obtained:
Name:	Sign of invigilator:			Sign of Valuator:
CO	CO 3	CO 4		Marks Obtained:
UNIT	III	IV		Total Marks

1. What does Bayes' Theorem describe? **[ ]**

A) A method for clustering data
B) The probability of an event based on prior knowledge
C) The relationship between dependent variables
D) A function for dimensionality reduction

2. What is the primary assumption of the Naïve Bayes classifier? **[ ]**

A) All features are dependent
B) All features are independent given the class
C) Data must be normally distributed
D) Only categorical features are allowed

3. The Gibbs Algorithm is mainly used for: **[ ]**

A) Optimizing machine learning models
B) Bayesian probability estimation
C) Image classification
D) Time series forecasting

4. What is Maximum Likelihood Estimation (MLE) used for? **[ ]**

A) Minimizing feature space
B) Finding parameters that maximize the probability of observed data
C) Reducing variance in predictions
D) Clustering large datasets

5. The Minimum Description Length (MDL) principle aims to: [ ]

A) Find the most complex explanation for a dataset
B) Find the simplest explanation for a dataset
C) Increase the number of features
D) Reduce computation speed

6. In Naïve Bayes, the probability of an event given evidence is known as: [ ]

A) Prior probability
B) Posterior probability
C) Likelihood
D) Marginal probability

7. What is the role of the prior probability in Bayes' Theorem? [ ]

A) It represents initial beliefs before new evidence is considered
B) It is the probability of the evidence
C) It is the final classification output
D) It is always equal to 1

8. What type of learning is K-Nearest Neighbors (KNN)? [ ]

A) Supervised Learning
B) Unsupervised Learning
C) Reinforcement Learning
D) Semi-supervised Learning

9. How does KNN classify a new data point? [ ]

A) By assigning the majority class of its nearest neighbors
B) By learning parameters during training
C) By computing probability distributions
D) By reducing dataset size

10. Which distance metric is commonly used in KNN? [ ]

A) Euclidean Distance
B) Hamming Distance
C) Jaccard Similarity
D) Cosine Similarity

11. What is the main goal of supervised learning? [ ]

A) To find hidden patterns in data
B) To learn a mapping from inputs to outputs using labeled data
C) To cluster similar data points
D) To reduce the dimensionality of data

12. In which of the following methods does the algorithm store all training instances and classify new data based on similarity? [ ]

A) Decision Trees
B) K-Nearest Neighbors (KNN)
C) Support Vector Machines (SVM)
D) Random Forest

13. What is the primary limitation of KNN? [ ]

A) It is difficult to implement
B) It requires large amounts of labeled data
C) It has high computational cost for large datasets
D) It cannot handle non-numeric data

14. Which of the following is a distance-based method? [ ]

A) Support Vector Machines
B) K-Means Clustering
C) K-Nearest Neighbors
D) Neural Networks

15. Which of the following statements about Decision Trees is true? [ ]

A) They perform well with non-linear relationships
B) They are sensitive to missing data
C) They do not require labeled data
D) They use support vectors for classification

16. Which of the following is a key advantage of Decision Trees? [ ]

A) High accuracy for large datasets
B) Easy interpretability
C) Requires no hyperparameter tuning
D) Works well with high-dimensional data

17. Which of the following methods is based on finding a hyperplane that maximizes the margin between two classes? [ ]

A) KNN
B) Decision Trees
C) Support Vector Machines (SVM)
D) K-Means Clustering

18. What is the kernel trick used for in SVM? [ ]

A) To convert categorical features into numerical values
B) To transform non-linearly separable data into higher-dimensional space
C) To reduce the number of training examples
D) To optimize hyperparameters

19. Which of the following is NOT a kernel function in SVM? **[ ]**

A) Linear Kernel
B) Polynomial Kernel
C) Gaussian Kernel
D) K-Means Kernel

20. In which type of learning is clustering used? **[ ]**

A) Supervised Learning
B) Unsupervised Learning
C) Reinforcement Learning
D) Semi-supervised Learning