23CTU525N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Fifth Semester)

Branch – **COMPUTER TECHNOLOGY**

MACHINE LEARNING

Time: Three Hours | Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Find out which type of learning to be used when there is no idea about the class or label of a particular data. a) Supervised learning algorithm b) Unsupervised learning algorithm c) Semi-supervised learning algorithm d) Reinforcement learning algorithm	K1	CO1
	2	Relate which among the following can be used for understanding relationship between two variables a) Box plot b) Scatter plot c) Histogram d) Matplot	K2	CO1
2	3	Which of the following is the measure of cluster quality? a) Purity b) Distance c) Accuracy d) All of the above	K1	CO2
	4	Outline when transforming a given set of input features to generate a new set of more powerful features then it is known as. a) Feature Selection b) Feature Engineering c) Feature Transformation d) Feature Re-engineering	K2	CO2
3	5	Choose which type of the probability have a particular hypothesis holds for a data set based on the Prior. a) Independent probabilities b) Posterior probabilities c) Interior probabilities d) Dependent probabilities	K1	CO3
	6	What is the formula for Bayes' theorem? Where (A & B) and (H & E) are events and P(B), P(H) & P(E) ≠ 0. a) P(H|E) = [P(E|H) * P(E)] / P(H) b) P(A|B) = [P(A|B) * P(A)] / P(B) c) P(H|E) = [P(H|E) * P(H)] / P(E) d) P(A|B) = [P(B|A) * P(A)] / P(B)	K2	CO3
4	7	Which of the following clustering algorithm is most sensitive to outliers? a) K-means clustering algorithm b) K-medians clustering algorithm c) K-medoids clustering algorithm d) K-modes clustering algorithm	K1	CO4
	8	Which among the following is correct when predicting whether a tumour is malignant or benign is an example of a) Unsupervised learning b) Supervised regression problem c) Supervised classification problem d) Categorical attribute	K2	CO4
5	9	k-means clustering algorithm is an example of which type of clustering method? a) Hierarchical b) Partitioning c) Density based d) Random	K1	CO5
	10	Which algorithm is commonly used for sentiment analysis? a) Naive Bayes b) K-nearest neighbors c) Decision trees d) Support Vector Machines	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer ALL questions

ALL questions carry EQUAL Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Analyze the various issues in machine learning.	K4	CO1
		(OR)		
	11.b.	Inspect the steps involved in machine learning activities with neat sketch.		
2	12.a.	Identify the model representation in terms of underfitting and overfitting.	K3	CO2
		(OR)		
	12.b.	Apply PCA method to extract the features in any real time applications.		
3	13.a.	Examine the importance of statistical tools in machine learning.	K4	CO3
		(OR)		
	13.b.	Assume a malignancy identification in a particular patient's tumor as an application for Bayes rule. Explain the steps briefly.		
4	14.a.	Compare the working principle of decision tree and random forest	K5	CO4
		(OR)		
	14.b.	Explain the importance of slopes in the simple linear regression with neat sketch.		
5	15.a.	Identify the difference between supervised and unsupervised learning.	K3	CO5
		(OR)		
	15.b.	Construct the challenges of text analytics.		

SECTION -C (30 Marks)

Answer ANY THREE questions

ALL questions carry EQUAL Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Categorize the different types of machine learning with few examples.	K4	CO1
2	17	Analyze the various performance evaluation metrics involved in the classification.	K4	CO2
3	18	Compare few examples of discrete random variables in practical life and how its behaviour is different from the continuous random variables?	K5	CO3
4	19	Explain how KNN algorithm works on the student data set.	K5	CO4
5	20	Examine the role of Agglomerative and divisive hierarchical clustering with an example.	K4	CO5

Z-Z-Z END