ANNA UNIVERSITY CHENNAI 25 - COLLEGE OF ENGINEERING GUINDY

DEPT. OF COMPUTER SCIENCE AND ENGINEERING

CS6301 MACHINE LEARNING - B.E. CSE – 6TH SEM - RUSA

ASSESSMENT -1 (50 marks / 1.30 HRS) – 9/4/22 - Slot: Dr. G.S. Mahalakshmi

Part-A (5x2 = 10)

1. What are DropOuts?
2. Compare ANN with its biological motivation.
3. Can Noise be the reason for Skewness? Justify your answer.
4. Give example for Joint Probability and Conditional Probability.
5. Distinguish: Bayes and Naïve Bayes

Part-B – 40 Marks

6. Design & Explain a Multi-layer Stacked Perceptron. (10)
7. Explain the working of K-Means Clustering with example (10)
8. Find Accuracy, Precision and Recall (6)

n=165	Predicted: NO	Predicted: YES	
Actual: NO	TN = 50	FP = 10	60
Actual: YES	FN = 5	TP = 100	105
	55	110	

Outlook	*Temp*	*Humidity*	*Windy*	*Golf?*
rainy	hot	high	false	no
rainy	hot	high	true	no
overcast	hot	high	false	yes
sunny	mild	high	false	yes
sunny	cool	normal	false	yes
sunny	cool	normal	true	no
overcast	cool	normal	true	yes
rainy	mild	high	false	no
rainy	cool	normal	false	yes
sunny	mild	normal	false	yes
rainy	mild	normal	true	yes
overcast	mild	high	true	yes
overcast	hot	normal	false	yes
sunny	mild	high	true	no

9. For the above figure, draw all possible decision trees and traverse whether Golf can be played on a High Humid Day. (10+4)

7.6.2022 **CS6301 Machine Learning Tutorial -2**

1. Consider (11, 12) is the location of a house and (20,10) is the location of the Market. Find the Euclidean distance and City-Block distance between the house and the Market.
2. What is the Conditional probability P(A/B)=_____

   If two events are **independent** then,

   p(X, Y) = _____

   p(X|Y) = _____

3. What is the idea behind KD tree. Construct the KD Tree from the following 2D data points: (4, 5),(1, 6),(6, 1),(7, 5),(2, 7),(2, 3),(5, 8)
4. Consider the following Data

   a) Compute the entropy of the target attribute

Action	Author	Thread	Length	Where
Skips	Known	new	Long	Home
Reads	unknown	new	Short	Work
Skips	unknown	Old	Long	Home
Skips	Known	Old	Long	Home
Reads	Known	new	Short	Home
Skips	known	Old	Long	Work

   b) Construct the decision tree from the above examples using ID3 algorithm. Show the information gain of each attribute at each step in the construction of the tree.

   c) Find the target attribute for the new examples

??	Known	New	Short	Work

5. Use CART algorithm to construct the tree for the above data (Q4)
6. Consider the following training set. Apply k-means clustering to this data set for k=2. Simulate the k-means algorithm for cluster assignments until convergence.

   (1,2), (2,2), (3,4), (5,4), (6,5), (2,4), (6,6) and (7,6)

7. Briefly explain the concept of ISOMAP.