

BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - V Computer Science & Engineering AI & ML : WINTER : 2023
SUBJECT : MACHINE LEARNING

Day : Thursday

Time : 02:30 PM-05:30 PM

Date : 30-11-2023

W-23958-2023

Max. Marks : 60

N.B.

- 1) All questions are **COMPULSORY**.
- 2) Figures to the **RIGHT** indicate **FULL** marks.
- 3) Assume suitable data **WHEREVER** necessary.
- 4) Draw neat labeled diagrams **WHEREVER** necessary.

Q.1 Draw DIKW pyramid and explain in details. (10)

OR

Q.1 Illustrate various combination of bias and variance, with diagrams. (10)

Q.2 The following table records the numbers of balls that Amit took for scoring runs. (10)
In how many balls is he likely to score a century?

Runs Scored	Number of Balls
8	10
35	20
47	31
54	23
11	5
85	47
84	35
93	67
89	73
2	1

OR

Q.2 Consider following table for binary classification. Calculate the root of the (10)
decision tree using Gini index

Sr. No.	Customer Income	Gender	Car Type	Class
1	High	M	Family	C1
2	High	M	Sports	C1
3	High	M	Family	C2
4	Low	M	Family	C2
5	Low	F	Family	C2
6	Low	F	Sports	C1
7	Low	F	Sports	C2
8	High	M	Family	C1
9	High	F	Family	C2
10	High	F	Family	C2
11	High	F	Sports	C2
12	Low	M	Sports	C2
13	Low	F	Family	C2
14	Low	M	Sports	C1

PTO

Q.3 Enlist and explain various ways to combine classifiers in details. (10)

OR

Q.3 What is Bagging? Explain in details with example. (10)

Q.4 Explain maximum margin concept behind SVM. Using diagram. (10)

OR

Q.4 What is Radial Basis Function? Explain in details. (10)

Q.5 With a diagram, explain how you can use minimum spanning tree for clustering. (10)

OR

Q.5 Use the following data and group them using K-means clustering algorithm. Show calculation of centroids. (10)

Height	Weight
185	72
170	56
168	60
179	68
182	72
188	77
180	71
180	70
183	84
180	88
180	67
177	76

Q.6 Find the singular value decomposition of $A = \begin{bmatrix} 2 & 2 \\ -1 & 1 \end{bmatrix}$ (10)

OR

Q.6 Describe the major types of dimensional reduction techniques (10)
