

Instructions to the Students:

1. All the questions are compulsory.
2. The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in () in front of the question.
3. Use of non-programmable scientific calculators is allowed.
4. Assume suitable data wherever necessary and mention it clearly.

(Level/CO) Marks

Q. 1 Solve Any Two of the following.

12

A) Differentiate between Supervised and Unsupervised learning.

Analyse/CO1

6

B) Explain Decision Tree Algorithm with Example.

Understand/CO1

6

C) Predict the class for (?) in the given below dataset using KNN algorithm.

Evaluate/CO1

6

Assume K=3.

BRIGHTNESS	SATURATION	CLASS
40	20	Red
50	50	Blue
60	90	Blue
10	25	Red
70	70	Blue
60	10	Red
25	80	Blue
20	35	?

Q.2 Solve Any Two of the following.

12

A) What is curse of Dimensionality? What are measures to resolve it?

Understand/CO2

6

B) Explain Logistic Regression with example.

Remember/CO2

6

C) Consider the training data in the following table

Apply/CO2

6

Humidity	Sunny	Wind	Play
L	N	S	No
H	N	W	Yes
H	Y	S	Yes
H	N	W	Yes
L	Y	S	No

Find the class label for the following day by applying naïve Bayesian classification to above dataset.

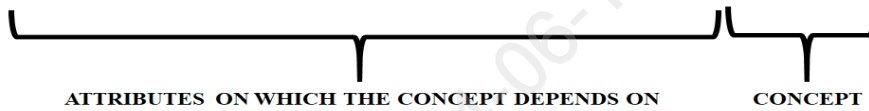
X = (Humidity=L, Sunny=N, Wind=W)

- Q.3 Solve Any Two of the following.** **12**
- A) How perceptron works? Explain. Understand/CO3 **6**
- B) What is backpropagation? Explain in brief with neat diagram. Understand/CO3 **6**
- C) Explain the Architecture of Convolutional Neural Network. Understand/CO3 **6**

- Q.4 Solve Any Two of the following.** **12**

- A) Explain the concept of Probably Approximately Correct learning Remember/CO4 **6**
- B) Consider the following data set having the data about which particular seeds are poisonous. Apply/CO4 **6**

EXAMPLE	COLOR	TOUGHNESS	FUNGUS	APPEARANCE	POISONOUS
1.	GREEN	HARD	NO	WRINKLED	YES
2.	GREEN	HARD	YES	SMOOTH	NO
3.	BROWN	SOFT	NO	WRINKLED	NO
4.	ORANGE	HARD	NO	WRINKLED	YES
5.	GREEN	SOFT	YES	SMOOTH	YES
6.	GREEN	HARD	YES	WRINKLED	YES
7.	ORANGE	HARD	NO	WRINKLED	YES



Apply the Find-S algorithm and find the final hypothesis.

- C) What is ensemble learning? Explain bagging and boosting. Understand/CO4 **6**

- Q. 5 Solve Any Two of the following.** **12**

- A) What is unsupervised machine learning? Explain with suitable example Understand/CO5 **6**
- B) Cluster the following eight points (with (x, y) representing locations) into three clusters: Apply/CO5 **6**
A1(2, 10), A2(2, 5), A3(8, 4), A4(5, 8), A5(7, 5), A6(6, 4), A7(1, 2), A8(4, 9)
Initial cluster centers are: A1(2, 10), A4(5, 8) and A7(1, 2).
- C) Explain Agglomerative Algorithm in Hierarchical Clustering in detail. Understand/CO5 **6**

***** End *****