

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT
TEST -2 EXAMINATION, Dec 2022

M.Tech DS(CSE) Semester (1)

Course Code: 22M1WCI132

MAX. MARKS: 25

Course Name: Artificial Intelligence Techniques

Course Credits: 03

MAX. TIME: 1.30 Hr

Course Coordinator : Ms. Aditi Sharma

Note: All questions are compulsory. Carrying of mobile phone during examinations will be treated as case of unfair means. Marks are indicated in square brackets against each question

Q.1. Define following terms:

(2 Marks)CO3

- Bias-variance tradeoff
- Underfitting

Q.2. Consider three models M1, M2, M3 developed on same dataset. Which model is more suitable for deployment, based on the confusion matrix of the three models? (2 Marks)CO4

14	7
3	11

M1

15	6
4	10

M2

13	8
2	12

M3

Q.3. Consider following fuzzy sets:

- $A = \{(X1, 0.5), (X2, 0.4), (X3, 0.1), (X4, 0.2)\}$
- $B = \{(X1, 0.3), (X2, 0.8), (X4, 0.7), (X5, 0.6)\}$
- $C = \{(X1, 0.2), (X3, 0.4), (X4, 0.6), (X5, 0.1)\}$

Perform following operations on these fuzzy sets:

(4 Marks)CO5

- Intersection of A, B and C
- Union of A, B and C
- Bounded difference of A, B
- Bounded Sum of A and C

Q.4. When is Recall more important than Precision? Justify your answer with help of an example.

(2 Marks)CO4

Q.5. Define Regularization. What is the need of regularization? Briefly discuss 2 regularization techniques.

(3 Marks)CO3

Q.6. Define Fuzzy Logic. Discuss any four membership function in detail.

(5 Marks)CO5

Q.7.

51	04	7	1	9
5	76	11	2	3
4	8	47	1	7
9	10	4	52	0
1	7	11	4	28

For the given confusion matrix, answer the following questions:

(7 Marks)CO5

- Check whether the dataset is balanced or imbalanced.
- Find accuracy and error rate of the model.
- Find the F-Measure of the dominant class.
- Calculate Precision and Recall for all the classes.

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