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Reg. No: | | | | | | | | | | |

VELAGAPUDI RAMAKRISHNA

SIDDHARTHA ENGINEERING COLLEGE

(AUTONOMOUS)

III/IV B.Tech. DEGREE EXAMINATION, JUNE, 2022

Sixth Semester

INFORMATION TECHNOLOGY

17IT3601 MACHINE LEARNING

Time: 3 hours ***Max. Marks: 70***

Part-A is compulsory

Answer One Question from each Unit of Part - B

Answer to any single question or its part shall be written at one place only

PART-A

10 x 1 = 10M

1. a. List the features of machine learning algorithms.
   b. State Bayes Theorem.
   c. What is regression?
   d. Give an example for descriptive learning.
   e. What is the minimum time complexity for training an SVM?
   f. List the three stages used to build the hypotheses or model in machine learning.
   g. What is the function of 'Unsupervised Learning'?
   h. Give an example for artificial neural network.
   i. What is the difference between heuristic for rule learning and heuristics for decision trees?
   j. What kind of distance metric(s) are suitable for categorical variables to find the closest neighbors?

PART-B

4 x 15 = 60M

UNIT-I

2. a. What is machine learning? Explain different perspectives and issues in machine learning. **8M**

   b. Discuss briefly about the pridiction of probabilities in Bayesian learning. **7M**

(or)

3. a. What is Gibbs Algorithm? Describe its suitability in machine learning? **8M**

   b. In which cases Naive Bayes method is useful in Classification? Why? **7M**

UNIT-II

4. a. Give Decision Tree representations for following Boolean Functions $A \vee (B \wedge C)$. Discuss how tree learning can be considered as variance reduction. **8M**

   b. Differentiate between unsupervised and descriptive clustering. **7M**

(or)

5. a. Illustrate the concepts of ranking and probability estimation trees. **7M**

   b. What is concept learning. Explain any one technique used in concept learning. **8M**

UNIT-III

6. a. Explain Nearest Neighbour techniques with an example. **8M**

   b. Explain how support vector machine can be used for classification of linearly separable data. **7M**

(or)

7. a. Describe the process of calculating the soft margin in support vector machine learning algorithm. **8M**

   b. Explain the procedure for obtaining probabilities from linear classifier. **7M**

UNIT-IV

8. a. What is a neural network? What type of problems are suitable with neural network? Explain hidden layer with suitable example. **8M**

   b. With a suitable example, explain back propagation in neural network ? **7M**

(or)

9. a. Explain hypothesis space search in genetic algorithms. **7M**

   b. Illustrate how genetic programming solves machine learning problem? **8M**

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