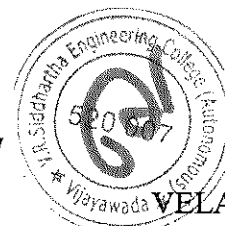


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VELAGAPUDI RAMAKRISHNA  
**SIDDHARTHA ENGINEERING COLLEGE**  
(AUTONOMOUS)

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*

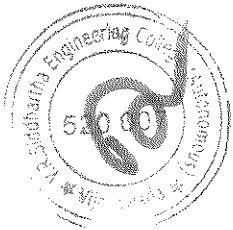
*Answer One Question from each Unit of Part - B*

*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?



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**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 prediction of probabilities in Bayesian learning. **7M**

(or)

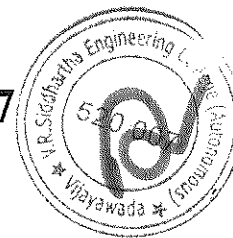
3. a. What is Gibbs Algorithm? Describe its suitability in machine learning? **8M**
- b. In which cases Naive Bayes method is useful in Classification? Why? **7M**

**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**



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**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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