

Reg. No.

Question Paper Code

11902

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL/MAY 2023

Sixth Semester

Electronics and Communication Engineering

20ECEL609 - MACHINE LEARNING TECHNIQUES

(Regulations 2020)

Duration: 3 Hours

Max. Marks: 100

**PART - A (10 × 2 = 20 Marks)**

Answer ALL Questions

- |                                                                            | <i>Marks,<br/>K-Level, CO</i> |
|----------------------------------------------------------------------------|-------------------------------|
| 1. List applications of machine learning.                                  | 2,K1,CO1                      |
| 2. Define Version space.                                                   | 2,K1,CO1                      |
| 3. State the inductive Learning Hypothesis.                                | 2,K1,CO2                      |
| 4. Outline the effect of reduced Error pruning in decision tree algorithm. | 2,K2,CO2                      |
| 5. Sketch the basic artificial neural network model.                       | 2,K1,CO3                      |
| 6. Define fitness function in Genetic algorithm.                           | 2,K1,CO3                      |
| 7. What is Maximum A Posterior probability?                                | 2,K1,CO4                      |
| 8. State Maximum likelihood theorem.                                       | 2,K1,CO4                      |
| 9. Define the concepts of first-order Horn clauses.                        | 2,K1,CO6                      |
| 10. What is Sequential Covering Algorithm?                                 | 2,K1,CO6                      |

**PART - B (5 × 13 = 65 Marks)**

Answer ALL Questions

- |                                                                                                                             |           |
|-----------------------------------------------------------------------------------------------------------------------------|-----------|
| 11. a) Explain in detail concept learning of machine learning algorithm.                                                    | 13,K2,CO1 |
| <b>OR</b>                                                                                                                   |           |
| b) Summarize the Candidate-Elimination Algorithm with an example                                                            | 13,K2,CO1 |
| 12. a) Explain in detail the FIND-S: Finding a Maximally Specific Hypothesis. Write its key properties of FIND-S algorithm. | 13,K2,CO2 |
| <b>OR</b>                                                                                                                   |           |
| b) Draw the decision tree for the following dataset.                                                                        | 13,K2,CO2 |

Manager	Assistants	Mood	Output
Shyam	3	No	Medium
Shyam	5	No	Medium
Shyam	1	Yes	High
Ram	1	Yes	Low

K1 – Remember; K2 – Understand; K3 – Apply; K4 – Analyze; K5 – Evaluate; K6 – Create

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Ram	5	No	Low
Ram	5	Yes	Low
Mohan	1	No	Low
Mohan	3	Yes	Medium
Mohan	5	No	High

13. a) Explain in detail delta learning rule for weight updation in the artificial neural network. 13,K2,CO3

**OR**

b) Describe Population evolution schema theorem in Genetic algorithm. 13,K2,CO3

14. a) State Bayes theorem and Explain in detail. 13,K2,CO4

**OR**

b) Describe Brute-Force Map Learning Algorithm. 13,K2,CO4

15. a) Describe in detail First-Order Horn Clauses with basic terminology in horn clauses. 13,K2,CO6

**OR**

b) With example explain Sequential covering algorithm. 13,K2,CO6

**PART - C (1 × 15 = 15 Marks)**

16. a) (i) Summarize the detail about locally weighted regression. 8,K2,CO5  
(ii) Describe distance weighted regression in instance based learning. 7,K2,CO5

**OR**

b) Explain about the Case-based reasoning (CBR) with an example. 15,K2,CO5