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Question Paper Code	12587
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B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2024

Seventh Semester

Computer Science and Engineering

CS8082 - MACHINE LEARNING TECHNIQUES

Regulations - 2017

Duration: 3 Hours

Max. Marks: 100

PART - A (10 × 2 = 20 Marks)

Answer ALL Questions

- | | <i>Marks</i> | <i>K-
Level</i> | <i>CO</i> |
|--|--------------|---------------------|-----------|
| 1. Point out the applications of machine learning. | 2 | K1 | CO1 |
| 2. List the algorithms of concept learning. | 2 | K2 | CO1 |
| 3. State the inductive Learning Hypothesis. | 2 | K1 | CO2 |
| 4. Label the set of instances with an example. | 2 | K2 | CO2 |
| 5. State the concept of ANN. | 2 | K1 | CO3 |
| 6. Distinguish between crossover and mutation. | 2 | K1 | CO3 |
| 7. Describe Maximum likelihood. | 2 | K1 | CO4 |
| 8. State about the Gibbs Algorithm. | 2 | K2 | CO4 |
| 9. State about the curse of dimensionality. | 2 | K1 | CO5 |
| 10. What is learn-one-rule? | 2 | K2 | CO6 |

PART - B (5 × 13 = 65 Marks)

Answer ALL Questions

- | | | | |
|--|----|----|-----|
| 11. a) Remember the three features to have a well-defined learning problem for the following | 13 | K2 | CO1 |
| (i) A checkers learning problem | | | |
| (ii) A handwritten recognition learning problem | | | |
| (iii) A robot driving learning problem. | | | |

OR

- | | | | |
|--|----|----|-----|
| b) Explain in detail about the useful perspective on machine learning. | 13 | K2 | CO1 |
| 12. a) i) Explain the Candidate-Elimination algorithm. | 6 | K2 | CO2 |

ii)

S.No	Sky	Air Temperature	Humidity	Wind	Water	Forecat	Enjoy report
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	String	Cold	Change	Yes

7 K3 CO2

Asses and apply the Candidate -Elimination algorithm to obtain the final version space for the training example.

OR

- b) i) Explain in detail the FIND-S: FINDING A MAXIMALLY SPECIFIC HYPOTHESIS. 7 K2 CO2
ii) Conclude the key properties of FIND-S algorithm. 6 K2 CO2
13. a) i) Summarize the derivation of the Back propagation Algorithm. 6 K2 CO3
ii) Explain Detail about the Gradient Descent algorithm. 7 K2 CO3
- OR**
- b) i) Explore how the hypothesis in GAs is represented by bit strings. 6 K2 CO3
ii) Write about the IF -THEN rules and why it can be encoded. 7 K2 CO3

14. a) Does the patient have cancer, or does he not? A patient takes a lab test and the result comes back positive. The test returns a correct positive result in only 98% of the cases in which the disease is actually present, and a correct negative result in only 97% of the cases in which the disease is not present. Furthermore, 0.008 of the entire population have this cancer. 13 K2 CO4

OR

- b) Demonstrate the General Statement of EM Algorithm. 13 K2 CO4
15. a) i) Summarize the detail about locally weighted regression. 6 K3 CO5
ii) Discuss the pros and cons of Locally weighted regression. 7 K2 CO5
- OR**
- b) Elucidate the detail the first order logic basic definitions. 13 K2 CO5

PART - C (1× 15 = 15 Marks)

16. a) i) List the learning sets of first-order rules: foil. 8 K3 CO6
ii) Memorize about the Basic Foil algorithm. 7 K3 CO6
- OR**
- b) Elaborate on Q functions, algorithm for Q learning in reinforcement learning. 15 K2 CO6