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JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

MCA IV Semester Examinations, April/May - 2019

MACHINE LEARNING

Time: 3hrs

Note: This question paper contains two parts A and B.

Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A

5×5 Marks = 25

Max.Marks:75

Define Inductive bias. 1.a) [5] Define: i) Sample error ii) True error b) [5] Explain minimum description length principle. c) [5] Explain briefly codebook generation. [5] d) Explain using prior knowledge to alter the search objective. e) [5]

PART - B

5 × 10 Marks = 50

[10]

2. Hand trace the Candidate – Elimination algorithm on the following training data.

s.no	Sky	Air Temp	Humidity	Wind	Water	Forecast	Enjoy sport
1	Sunny	warm	Normal	light	warm	same	yes
2	Sunny	Warm	High	strong	cool	change	yes
3	Rainy	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Warm	Same	Yes
5	Sunny	Warm	Normal	Strong	Warm	Same	yes

You should hand trace the algorithm by performing the tracing with examples given in the table in the ascending order of serial number. [10]

OR

- 3. Write the Candidate-Elimination Algorithm.
- 4. Write the relevant Mathematical formulae and describe the working of Perceptron with a neat diagram. Hand trace the perceptron learning rule to implement 2 input EX-OR gate for 2 iterations through all 4 training examples. [10]

OR

Explain basics of sampling theory. 5.a) Explain Error estimation and estimating Binomial Proportions. b) [5+5]6. Explain the working of Naïve Bayes classifier with necessary formulae and with an example. [10] OR 7.a) Explain the working of Bayes optimal classifier with an example. Explain Maximum Description Length principle. b) [5+5] 8. Explain Discrete Markov Processes. [10] OR 9. Explain the working of HMMs. [10] Explain Inductive and analytical learning problems with examples. 10.a) Write the explanation based learning algorithm: Prolog-EBG. b) [5+5] OR Write and explain KBANN algorithm. 11. [10]

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