Code No: 844AC

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
MCA IV Semester Examinations, April/May - 2019
MACHINE LEARNING

Time: 3hrs   Max.Marks:75

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

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

PART - B

5 × 10 Marks = 50

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.   [10]

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

5.a)   Explain basics of sampling theory.
 b)   Explain Error estimation and estimating Binomial Proportions.   [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.
 b)   Explain Maximum Description Length principle.   [5+5]

8.   Explain Discrete Markov Processes.   [10]

OR

9.   Explain the working of HMMs.   [10]

10.a) Explain Inductive and analytical learning problems with examples.
 b)   Write the explanation based learning algorithm: Prolog-EBG.   [5+5]

OR

11.   Write and explain KBANN algorithm.   [10]