

Please check that this question paper contains 9 questions and 2 printed pages within first ten minutes.

[Total No. of Questions: 09]

[Total No. of Pages: .02.....]

Uni. Roll No.

Program: B.Tech. (Batch 2018 onward)

Semester: 6th

Name of Subject: Machine Learning

Subject Code: PCCS-114

Paper ID: 17190

Scientific calculator is Allowed

Detail of allowed codes/charts/tables etc. ...Nil.....

Max. Marks: 60

Time Allowed: 03 Hours

NOTE:

- 1) Parts A and B are compulsory
- 2) Part-C has Two Questions Q8 and Q9. Both are compulsory, but with internal choice
- 3) Any missing data may be assumed appropriately

Part – A

[Marks: 02 each]

Q1.

- a) Define the concept of Inductive Bias
- b) What do you mean by Concept Learning?
- c) Differentiate between linear regression and logistic regression.
- d) Explain and list ensemble methods in machine learning.
- e) Differentiate between Training data and Testing Data.
- f) How matrix factorization works in dimensionally reduction?

Part – B

[Marks: 04 each]

- Q2. Explain the important features that are required to well –define a learning problem.
- Q3. Explain K-nearest neighbour method for discrete valued function.
- Q4. List and Describe the prospective and issues of machine learning.
- Q5. How is Candidate Elimination algorithm different from Find-S Algorithm
- Q6. Illustrate Occam's razor and relate the importance of Occam's razor with respect to ID3 algorithm.
- Q7. Discuss the relationship between the maximum likelihood hypothesis and the least squared error hypothesis.

Part – C

[Marks: 12 each]

- Q8. What is a Perceptron? Explain representational power of Perceptrons with suitable example.

OR

Write an algorithm for back propagation algorithm Also describe the derivation of back propagation rule.

- Q9. Which attribute is the best classifier for decision tree using given training examples?

Target attribute: play Tennis='yes'

Day	Outlook	Temperature	Humidity	Wind	PlayTennis
D1	Sunny	Hot	High	Weak	No
D2	Sunny	Hot	High	Strong	Yes
D3	Overcast	Hot	High	Weak	Yes
D4	Rain	Mild	High	Weak	No
D5	Rain	Cool	Normal	Weak	Yes
D6	Rain	Cool	Normal	Strong	No
D7	Overcast	Cool	Normal	Strong	Yes
D8	Sunny	Mild	High	Weak	No
D9	Sunny	Cool	Normal	Weak	Yes
D10	Rain	Mild	Normal	Weak	No
D11	Sunny	Mild	Normal	Strong	Yes
D12	Overcast	Mild	High	Strong	Yes
D13	Overcast	Hot	Normal	Weak	No
D14	Rain	Mild	High	Strong	No

OR

Using the candidate elimination algorithm, find the maximally general hypothesis and maximally specific hypothesis for the training examples given in the table

Sky	Temp	Humidity	Wind	Water	Forecast	Sport
Sunny	warm	Normal	Strong	warm	same	Yes
Sunny	warm	High	Strong	warm	same	Yes
Rainy	cold	High	Strong	warm	change	No
Sunny	warm	High	Strong	cool	change	Yes
