

[Total No. of Printed Pages:1]
CODE NO:- Z-8003
FACULTY OF ENGINEERING
M.E (CSE) Year Examination-June-2015
Machine Learning
(Revised)

Time: Three Hours

Maximum Marks: 80

“Please check whether you have got the right question paper.”

- i) Solve any two questions from each section.
- ii) Assume suitable data if necessary and state clearly.

SECTION-A

Q.1 a) What are the important objectives of machine learning? What are the basic design issues and approaches to machine learning? 10

b) Consider the following set of training example: 10

Instance	Classification	a ₁	a ₂
1	+	T	T
2	+	T	T
3	-	T	F
4	+	F	F
5	-	F	T
6	-	F	T

- 1) what is the entropy of this collection of training example with respect to target function classification.
- 2) what is information gain of a₂ relative to these training examples?

Q.2 a) What is linearly in separable problem? Design a two layer network of perceptron to implement A XOR B 10

b) Explain find –S algorithm with given example. Give its application. 10

Example	SKY	Air Temp.	Humidity	Wind	Water	Fore cast	Enjoy sport
1	Sunny	Warm	Normal	Strong	Warm	Same	Yes
2	Sunny	Warm	High	Strong	Warm	Same	Yes
3	Rain	Cold	High	Strong	Warm	Change	No
4	Sunny	Warm	High	Strong	Cool	Change	Yes

Q.3 a) Consider a multilayer feed forward neural network. Enumerate and explain steps in back propagation algorithm use to train network. 10

b) Describe in brief: 10

- 1) Hypothesis space search in decision tree.
- 2) Inductive bias in decision tree learning.

SECTION-B

Q.4 a) Explain the procedure to estimate difference in error between two learning methods. Consider a learned hypothesis h, for some Boolean concept. When h is tested on a set of 100 examples it classifies 83 correctly what is the standard deviation and 95% confidence interval for the true error rate for error_D(h)? 10

b) Explain Bayesian belief network and conditional independence with example. 10

Q.5 a) Explain Brute force MAP hypothesis learner? What is minimum description length (MDL) principle? 10

b) Explain salient features of a Genetic Algorithm. Describe basic genetic algorithm using all the necessary steps of fitness function evaluation. 10

Q.6 a) Explain mistake bound model of learning for find-S and halving algorithm. 10

b) Describe in brief: 10

- 1) Crossover & mutation
- 2) Case based reasoning.