

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.

OR

OR

- b. What are Horn Clauses? Write a declarative and a procedural representation. List syntactic difference between Logic and PROLOG. (08 Marks)

Module-3

- 5 a. Construct decision tree using ID3 algorithm for the following data : (12 Marks)

Day	Outlook	Temp	Humidity	Wind	Decision
1	Sunny	Hot	High	Weak	Yes
2	Sunny	Hot	High	Strong	No
3	Overcast	Hot	High	Weak	Yes
4	Rain	Mild	High	Weak	No
5	Rain	Cool	Normal	Weak	Yes

- b. Derive Gradient descent rule. (08 Marks)

OR

- 6 a. Give decision tree to represent the following Boolean functions :
 i) $A \wedge \neg B$ ii) $A \vee [B \wedge C]$ iii) $A \text{ XOR } B$ iv) $[A \wedge B] \vee [C \wedge D]$. (08 Marks)
- b. Explain Perceptron with appropriate diagram Represent AND Boolean function using Perceptron. (04 Marks)
- c. Write Back propagation algorithm. (08 Marks)

Module-4

- 7 a. 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. Further, 0.008 of the entire population have the Cancer. Does a patient have Cancer or not? (10 Marks)
- b. Derive Brute force MAP learning and also mention assumption made in this process. (10 Marks)

OR

- 8 a. Explain Minimum Description Length Principle (MDL). (06 Marks)
- b. Explain Naïve Bayes classifier and Bayesian belief Networks. (08 Marks)
- c. Write EM algorithm. (06 Marks)

Module-5

- 9 a. Explain K – NN algorithm. (06 Marks)
- b. Explain steps of Locally Weighted Linear regression. (07 Marks)
- c. Describe Radial basis function with appropriate diagram. (07 Marks)

OR

- 10 a. Illustrate the basic concept of Q – learning using Simple Deterministic World. (10 Marks)
- b. Explain Q – Learning algorithm. (10 Marks)