

Basavarajeswari Group of Institutions

2024 SCHEME

BALLARI INSTITUTE OF TECHNOLOGY & MANAGEMENT

(Autonomous Institute under Visvesvaraya Technological University, Belagavi)

USN

Course Code

Third Semester MCA Degree Examinations, January 2026

MACHINE LEARNING

Duration: 3 hrs

Max. Marks: 100

Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.
2. Missing data, if any, may be suitably assumed

<u>Q. No</u>	<u>Question</u>	<u>Marks</u>	<u>(RBTl:CO: PI)</u>
<u>Module-1</u>			
1.	a. Define machine learning. Describe the area and applications influencing for machine learning.	10	(1:1:1.2.1)
	b. Define version space and explain List then eliminate algorithm.	10	(2:1:1.2.1)
(OR)			
2.	a. Summarise the designing a learning system with required steps.	10	(2:1:2.2.1)
	b. Demonstrate Find – s algorithm with an example.	10	(3:1:2.2.1)
<u>Module-2</u>			
3.	a. Describe the ID3 algorithm in detail.	10	(3:2:2.2.1)
	b. What are the issues in decision tree learning related to attribute selection? Discuss.	10	(2:2:1.2.1)
(OR)			
4.	a. Explain the representation of a decision tree with an example.	10	(2:2:2.2.1)
	b. Define entropy and information gain. Explain their computation with an example.	10	(1:2:1.2.1)
<u>Module-3</u>			
5.	a. Define ANN. Describe with its representation an ANN.	10	(2:3:2.2.1)
	b. Explain multilayer network and back propagation algorithm.	10	(2:3:2.2.1)
(OR)			
6.	a. What are Perceptrons? Explain its representation with an example.	10	(2:3:2.2.1)
	b. Describe the remarks on the back propagation algorithm.	10	(3:3:2.2.1)
<u>Module-4</u>			
7.	a. Describe maximum likelihood and hypothesis for predicting probabilities.	10	(2:4:2.2.1)

- b. Define Bayesian theorem. What is the prevalence and features of Bayesian theorem? Explain the practical differences of Bayesian theorem. **10** **(2:4:1.2.1)**

(OR)

8. a. Define Maximum a Posteriori (MAP) and Maximum Likelihood (ML). Derive the solution for H_{MAP} . **10** **(2:4:1.2.1)**
- b. Describe k-nearest neighbour learning algorithm for discrete values and real values target function. **10** **(2:4:2.2.1)**

Module-5

9. a. Define cluster analysis. Illustrate with examples different types of clusters. **10** **(2:5:1.2.1)**
- b. Describe density-based clustering or DB scanner with its algorithm, strength and weakness. **10** **(2:5:2.2.1)**

(OR)

10. a. Demonstrate the algorithm of k - means clustering and its variant. Discuss its strength and limitations. **10** **(2:5:2.2.1)**
- b. Write a short note on cluster evaluation. **10** **(2:5:2.2.1)**

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