20/25

Code No.: R22EC57301PE | R22 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
II–M.TECH–I–Semester End Examinations (Regular) - January- 2025
AI & MACHINE LEARNING (PE-V)
(VLSI SD)

[Time: 3 Hours] **[Max. Marks: 60]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 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 **(10 Marks)**

1. a)	List the issues involved in decision tree learning.	[1M]
b)	How are linear classifiers different from non-linear classifiers?	[1M]
c)	What is the necessity of dimensionality reduction?	[1M]
d)	Define the latent factor model.	[1M]
e)	What is meant by Ensemble learning?	[1M]
f)	What is bagging?	[1M]
g)	How the neural networks represented in computers?	[1M]
h)	What are the advantages of backpropagation?	[1M]
i)	What is Fuzzy logic?	[1M]
j)	What is a Knowledge Representation in fuzzy neural network?	[1M]

PART-B **(50 Marks)**

2.a)	Explain the Naïve Bayes classifier in detail.	[5M]
b)	What is regression? Explain types of regression.	[5M]
	OR	
3.a)	What is a Support vector machine? How does a support vector machine work? Explain.	[5M]
b)	Demonstrate the importance of scoring and ranking in assessing the performance of classification tasks.	[5M]
4.	Write about K-Means clustering with an example.	[10M]
	OR	
5.a)	What is Principal Component Analysis? Explain.	[5M]
b)	Explain the generative models in detail.	[5M]
6.	Difference between Bagging and Boosting methods, write the implementation steps for Bagging method.	[10M]
	OR	
7.	Discuss the Random Forest learning classification and its remarks in detail.	[10M]
8.	What is Artificial Neural Network? Explain the architecture of the Artificial neural network.	[10M]
	OR	
9.a)	Give an example of learning the XOR function to explain a fully functioning feed-for neural network in detail.	[5M]
b)	Explain the backpropagation algorithm in training neural networks.	[5M]
10.	Elaborate the Knowledge Representation and Inference mechanism in fuzzy neural network.	[10M]
	OR	
11.	Illustrate the de fuzzification methods in Fuzzy neural networks.	[10M]

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