Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U4F02

B.E./B.Tech. DEGREE EXAMINATION, NOV 2023

Fifth Semester

Computer Science and Design

21UCD502 FOUNDATIONS OF MACHINE LEANING

(Regulations 2021)

Duration: Three hours | Maximum: 100 Marks

Answer All Questions

PART A - (10 x 2 = 20 Marks)

1.	Define Artificial Intelligence (AI)	CO1-U
2.	What are the types of Machine Learning?	CO1-U
3.	Explain Continuous Distribution	CO1-U
4.	Explain the application of Bayes' theorem.	CO1-U
5.	What is the 'Training set' and 'Test set'?	CO1-U
6	What is the main key difference between supervised and unsupervised machine learning?	CO1-U
7	What is the most basic type of neural network?	CO1-U
8	What is the trade-off between bias and variance?	CO1-U
9	What is the primary objective of unsupervised learning?	CO1-U
10	What do you understand by the Reinforcement Learning technique?	CO1-U

PART – B (5 x 16= 80 Marks)

11.	(a)	Explain the types of search algorithms in Artificial Intelligence.	CO1-U	(16)
		Or		
	(b)	Explain different ways to evaluate the performance of the Machine Learning Model.	CO1-U	(16)

12. (a) A training data set of weather and the corresponding target variable 'Play' (suggesting possibilities of playing). CO2-App (16)

	Outlook	Play		Outlook	Play
0	Rainy	Yes	7	Overcast	Yes
1	Sunny	Yes	8	Rainy	No
2	Overcast	Yes	9	Sunny	No
3	Overcast	Yes	10	Sunny	Yes
4	Sunny	No	11	Rainy	No
5	Rainy	Yes	12	Overcast	Yes
6	Sunny	Yes	13	Overcast	Yes

Solve if the weather is sunny, then the Player should play or not use Naive Bayes to predict.

Or

(b) Suppose we are building a classifier that says whether a text is about sports or not. Our training data has 5 sentences: CO2-App (16)

Text	Tag
"A great game"	Sports
"The election was over"	Not sports
"Very clean match"	Sports
"A clean but forgettable game"	Sports
"It was a close election"	Not sports

Now, which tag does the sentence "A very close game" belongs to? Explain how Naive Bayes can be employed to predict.

13. (a) Explain regression and its types with examples CO1-U (16)

Or

(b) Explain the Support Vector Machine(SVM) algorithm with an example CO1-U (16)

14. (a) Explain briefly the operation of a biological neural network with a simple sketch. CO1-U (16)

Or

(b) Explain briefly the back propagation and its features CO1-U (16)

15. (a) Explain K-means Clustering algorithm with example. CO1-U (16)

Or

(b) Describe ensemble method in machine learning and its types? CO1-U (16)