NARULA INSTITUTE OF TECHNOLOGY
An Autonomous Institute under MAKAUT

B.TECH/CSE/EVEN/SEM8/R18/ CS802B/2022-2023
YEAR: 2023

MACHINE LEARNING
CS802B

TIME ALLOTTED: 3 HOURS FULL MARKS: 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own words as far as practicable

GROUP – A
(Multiple Choice Type Questions)

1. Answer any ***ten*** from the following, choosing the correct alternative of each question: **10×1=10**

SL	Question	Marks	Co	Blooms Taxonomy Level
(i)	The Real-world machine learning use cases are _____. A. Digital assistants B. Chatbots C. Fraud detection D. All of the above	1	2	1,2
(ii)	Application of Machine learning is _____. A. email filtering B. sentimental analysis C. face recognition D. All of the above	1	1	1,2
(iii)	_____ is a part of machine learning that works with neural networks. A. Artificial intelligence B. Deep learning C. Both A and B D. None of the above	1	3	1,2
(iv)	The supervised learning problems can be grouped as_____. A. Regression problems B. Classification problems C. Both A and B D. None of the above	1	1	1,2
(v)	The Bayes rule can be used in ..... A. Solving queries B. Increasing complexity	1	2	1,2

C. Decreasing complexity
D. Answering probabilistic query

(vi)	Supervised learning and unsupervised clustering both require at least one ..... A. Input attribute B. Output attribute C. Hidden attribute D. Categorical attribute	1	2	1,2
(vii)	What is the disadvantage of decision trees? A. Factor analysis B. Decision trees are robust to outliers C. Decision trees are prone to be overfit D. All of the above	1	2	1,2
(viii)	The output of training process in machine learning is_____ A. machine learning algorithm B. machine learning model C. null D. accuracy	1	2	1,2
(ix)	You are given reviews of few Netflix series marked as positive, negative and neutral. Classifying reviews of a new Netflix series is an example of_____ A. unsupervised learning B. semi supervised learning C. supervised learning D. reinforcement learning	1	2	1,2
(x)	What strategies can help reduce overfitting in decision trees? A. Make sure each leaf node is one pure class B. Enforce a minimum number of samples in leaf nodes C. Enforce a maximum depth for the tree D. Pruning	1	2	1,2
(xi)	Machine Learning can automate many tasks, especially the ones that only humans can perform	1	2	1,2

with their innate intelligence.
A. True
B. False

(xii) In Machine learning the module that must solve the given performance task is known as 1 4 1,2
A. Critic
B. Generalizer
C. Performance system
D. All of these

GROUP – B
(Short Answer Type Questions)
(Answer any three of the following) 3 x 5 = 15

SL	Question	Marks	Co	Blooms Taxonomy Level
2.	Explain the principle of the gradient descent algorithm. Accompany your explanation with a diagram. Explain the use of all the terms and constants that you introduce and comment on the range of values that they can take.	5	2	1,2
3.	What is decision tree? Explain in detail.	5	3	1,2
4.	What is Entropy? What is Information Gain?	5	2	1,2
5.	What is Bias? Explain Preference Bias, Restriction Bias and their significance.	5	4	1,2
6.	Compare Entropy and Information Gain in ID3.	5	4	1,2

GROUP – C
(Long Answer Type Questions)
(Answer any three of the following) 3 x 15 = 45

SL		Question	Marks	Co	Blooms Taxonomy Level
7.	(i)	Illustrate the candidate elimination algorithm with suitable example.	8	5	2,3
	(ii)	Define the following terms a) Sample error. b) True error. c) Expected value.	7	3	1,2

8.	(i)	Explain ensemble algorithm	6	3	2,3
	(ii)	What is K-means algorithm?	5	3	1,2
	(iii)	State 3 types of Machine Learning with one example of each.	4	1	1,2
9.	(i)	Write the algorithm for Support Vector machine.	6	2	2.3
	(ii)	Define ranking and its concepts?	9	2	1,2
10.	(i)	What is Artificial Neural Network? What are the applications of ANN in ML?	3+5	5	1,2
	(ii)	Compare between Biological Neural Network and Computer Networks with proper diagram.	5	4	1,2
	(iii)	What is perception model?	2	5	1,2
11.		Write Short Notes on any three of the followings: A. Naïve Bayes model for classification B. Hierarchical clustering C. Probabilistic Models D. Compression Based Model	5x3=15	3,4,5	1,2