Name: **Enrolment No:**	

UPES

End Semester Examination, May 2023

Course: Artificial Intelligence and machine Learning in Science **Semester: II**

Program: M.Sc. Chemistry **Time : 03 hrs.**

Course Code: CSAI7016 **Max. Marks: 100**

Instructions:

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Briefly explain Binomial distribution.	**4**	**CO1**
Q 2	Describe how feature extraction is a key process in machine learning.	**4**	**CO2**
Q 3	Briefly discuss regression problems in machine learning with an example.	**4**	**CO2**
Q 4	Explain use of loss functions in neural networks.	**4**	**CO3**
Q 5	Describe back-propagation in neural networks.	**4**	**CO3**

SECTION B
(4Qx10M= 40 Marks)

Q 6	Outline the role of statistics in machine learning.	**10**	**CO1**
Q 7	Write mathematical formula of any five activation functions used in neural networks.	**10**	**CO3**
Q 8	Explain unsupervised learning in machine learning with an example.	**10**	**CO2**
Q 9	Explain K-Nearest Neighbor (KNN) algorithm for machine learning. OR Explain decision tree classification algorithm and its working principle. Also discuss its applications and write any five terminologies used in decision tree.	**10**	**CO2**

SECTION-C (2Qx20M=40 Marks)			
Q 10	Suppose that a merchant sells fish in packets. A packet contains fishes of the same type. Assume that the merchant operates in a sea containing only two kinds of fish. After catching the fish, the merchant segregates the fish into packets. Since the business is large scale, suggest to the merchant how he/she can automate the process using machine learning.	**20**	**CO2**
Q 11	Explain convolutional neural network (CNN) with a diagram. **OR** Explain iris dataset for classification and write a program to find the best correlated features in the iris dataset. Use a neural network for finding sepal length of a flower using sepal width, petal length and petal width.	**20**	**CO3**