DR. BABASAHEB AMBEDKAR TECHNOLOGICAL UNIVERSITY, LONERE

Regular and Supplementary Winter Examination – 2023

Course: B. Tech. Branch : Information Technology Semester :VII

Subject Code & Name: Machine Learning (BTITOE704B)

Max Marks: 60 Date: 09/01/2024 Duration: 3 Hr.

Instructions to the Students:

1. *All the questions are compulsory.*
2. *The level of question/expected answer as per OBE or the Course Outcome (CO) on which the question is based is mentioned in ( ) in front of the question.*
3. *Use of non-programmable scientific calculators is allowed.*
4. *Assume suitable data wherever necessary and mention it clearly.*

		(Level/CO)	Marks
Q. 1	**Solve Any Two of the following.**		
A)	Explain the well-posed learning problems for designing a machine learning system in detail with some examples.	**CO1**	**6**
B)	Explain the concept of cross validation in detail.	**CO2**	**6**
C)	What is hypothesis testing? Explain the hypothesis testing with respect to a machine learning system with example.	**CO2**	**6**
Q.2	**Solve Any Two of the following.**		
A)	Explain linear regression & logistic regression algorithms with at least 2 problems for each algorithm where you will use these algorithms.	**CO4**	**6**
B)	Explain the following terms. Bias, Variance, Training &Testing, Overfitting, Occam's razor, Prunning	**CO1**	**6**
C)	Explain the Bayes classifier with example.	**CO4**	**6**
Q. 3	**Solve Any Two of the following.**		
A)	Explain the architecture and working of Multilayer Perceptrons (MLPs) in detail.	**CO5**	**6**
B)	Explain the backpropagation algorithm of neural network in detail.	**CO5**	**6**
C)	Explain various activation functions in detail.	**CO7**	**6**
Q.4	**Solve Any Two of the following.**		
A)	Explain the working and use of principal component analysis.	**CO7**	**6**
B)	Write a short note on autoencoders.	**CO4**	**6**
C)	Explain the concept of regularization in detail.	**CO5**	**6**
Q. 5	**Solve Any Two of the following.**		
A)	Explain vanishing and exploding gradients problems in detail.	**CO5**	**6**
B)	Explain various functional layers in CNN in detail.	**CO4**	**6**
C)	Explain working and application of recurrent neural networks.	**CO7**	**6**