U.S.N | | | | | | | | | | |

P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Sixth Semester, B.E. - Information Science and Engineering

Semester End Examination; August - 2023

Machine Learning

Time: 3 hrs *Max. Marks: 100*

Course Outcomes

The Students will be able to:

CO1: Understand types of Machine learning algorithms.
CO2: Implement various classification algorithms using Python and apply techniques for building a good data set.
CO3: Implement dimensionality reduction techniques using Python and perform model evaluation.
CO4: Implement Linear Regression, k-means and artificial neural network methods using Python.
CO5: Understand fundamentals of Deep learning and Tensor flow.

***Note**: I) **PART - A** is compulsory. **Two** marks for each question.*

*II) **PART - B**: Answer any **Two** sub questions (from a, b, c) for Maximum of **18 marks** from each unit.*

Q. No.	Questions	Marks	BLs	COs	POs
	I : PART - A	**10**			
1 a.	Explain reinforcement learning with a block diagram.	2	L2	CO1	PO1
b.	List the main steps in training a machine learning algorithm.	2	L2	CO2	PO1
c.	What is confusion matrix?	2	L1	CO3	PO1
d.	Give mathematical notation of simple linear regression.	2	L2	CO4	PO1
e.	What are the different parts of MNIST data set?	2	L2	CO5	PO1
	II : PART - B	**90**			
	UNIT - I	**18**			
2 a.	What are the different types of machine learning?	9	L1	CO1	PO1
b.	Explain the roadmap for building machine learning systems.	9	L1	CO1	PO2
c.	Write a python program to implement SVM classification (without built in function) to classify the data.	9	L3	CO1	PO2
	UNIT - II	**18**			
3 a.	Explain the concept of perceptron.	9	L1	CO2	PO1
b.	Write a python code for logistic regression by using wine dataset. Where "x" comprises age and estimated salary and "y" comprises item purchased.	9	L3	CO2	PO1
c.	Write a python code snippets for the following: i) Identifying missing values in tabular data ii) Eliminating features with missing values	9	L3	CO2	PO1

Contd…2

	UNIT - III	**18**			
4 a.	Summarize the steps behind the principle component analysis.	9	L2	CO3	PO2
b.	Write a python code using Latent Dirichlet Allocation class implemented in scikit-learn to decompose the movie review data set and categorize it into different topics.	9	L3	CO3	PO1
c.	Explain *k*-fold cross validation to assess model performance.	9	L2	CO3	PO1
	UNIT - IV	**18**			
5 a.	Explain simple linear regression and multiple linear regression.	9	L2	CO4	PO2
b.	Write a python code to apply *k*-means algorithm to any sample data set.	9	L3	CO4	PO2
c.	Explain the process of forward propagation to calculate the output of an MLP model.	9	L2	CO4	PO1
	UNIT - V	**18**			
6 a.	Write equation for different activation function used in ANN.	9	L2	CO5	PO1
b.	Explain the following concepts: i) Tensor flow ranks and tensors ii) Placeholders in tensor flow	9	L2	CO5	PO1
c.	Explain the different steps with code to restoring a trained model.	9	L2	CO5	PO1

* * * *