Code No: R2032051 **R20** SET -1

III B. Tech II Semester Regular Examinations, July -2023
MACHINE LEARNING
(Com. to CSE & IT)

Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
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UNIT-I

1. a) Can you name and explain four of the main challenges in Machine Learning? [7M]
   b) Differentiate traditional and machine learning approaches with neat sketches. [7M]

(OR)

2. a) List and explain Risk statistics. [7M]
   b) Explain Training and Test Loss while generating the models. [7M]

UNIT-II

3. a) What are General Linear Models? Give their parametric equations. [7M]
   b) Explain about ANOVA in detail. [7M]

(OR)

4. a) What is the Role of Distance Measures ML Algorithms? Illustrate. [7M]
   b) Explain KNN algorithm with an example. [7M]

UNIT-III

5. a) What is the difference between hard and soft voting classifiers? Explain them. [7M]
   b) Define Boosting? Explain about Ada Boosting technique. [7M]

(OR)

6. a) Explain about Linear SVM Classification in detail. Compare it with nonlinear model. [7M]
   b) Describe Gaussian RBF kernel in SVM. [7M]

UNIT-IV

7. a) Describe K means clustering algorithm. [7M]
   b) Using K means clustering algorithm form two clusters for given data. [7M]

Height	185	170	168	179	182	188	180	200	183	180	180	177
Weight	72	56	60	68	72	77	71	70	84	88	67	76

(OR)

8. a) What is Curse of Dimensionality? How to find the solution for it? Explain. [7M]
   b) Explain about Kernel PCA in detail. [7M]

UNIT-V

9. a) How Biological Neurons related to ANN? Explain. [7M]
   b) With neat sketch explain Loading and preprocessing data from multiple CSV files? [7M]

(OR)

10. a) Name three popular activation functions. Can you draw and explain them? [7M]
    b) Explain about the step-by-step procedure to install TensorFlow 2. [7M]

Code No: R2032051 **R20** SET -2

III B. Tech II Semester Regular Examinations, July -2023
MACHINE LEARNING
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Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	What is Machine Learning? Explain any four applications with an example.	[7M]
	b)	Write the differences between Artificial Intelligence, Machine Learning and Deep Learning.	[7M]
		(OR)	
2.	a)	Explain Tradeoffs in Statistical Learning.	[7M]
	b)	What is the importance of Probability and Statistics while generating supervised or unsupervised model? Explain.	[7M]

UNIT-II

3.	a)	What is the decision tree? How to choose attribute selection in decision tree?	[7M]
	b)	Explain about Decision tree classifier with an example.	[7M]
		(OR)	
4.	a)	Can Logistic regression be used for classification or regression? Discuss about Logistic Regression algorithm.	[7M]
	b)	Explain about MNIST dataset. Describe the procedure to apply classification technique.	[7M]

UNIT-III

5.	a)	What are the benefits of out-of-bag evaluation? Explain it.	[7M]
	b)	Discuss about Extra trees. Are Extra-Trees slower or faster than regular Random Forests? Explain.	[7M]
		(OR)	
6.	a)	Define Non-linear classification. Explain the list of kernels in SVM briefly.	[7M]
	b)	Explain SVM regression in detail with a neat diagram.	[7M]

UNIT-IV

7.	a)	What is Density based clustering? Describe DBSCAN clustering algorithm.	[7M]
	b)	How can we use clustering for Preprocessing? Explain.	[7M]
		(OR)	
8.	a)	What are the main motivations for reducing a dataset's dimensionality? What are the main drawbacks?	[7M]
	b)	In what cases would you use Incremental PCA, Randomized PCA & Kernel PCA? Explain.	[7M]

UNIT-V

9.	a)	Explain about Logical Computations with Neurons.	[7M]
	b)	Differentiate Forward and Backward propagations in ANN .	[7M]
		(OR)	
10.	a)	Why would you want to use the Data API? Explain about Data API?	[7M]
	b)	Illustrate the two types of implementation of Keras API.	[7M]

Code No: R2032051 **R20** SET -3

III B. Tech II Semester Regular Examinations, July -2023
MACHINE LEARNING
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Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	What is Batch and online learning system? Explain.	[7M]
	b)	Would you frame the problem of spam detection as a supervised learning problem or an unsupervised learning problem? Explain.	[7M]
		(OR)	
2.	a)	What is Empirical Risk Minimization? Explain Estimating the risk using cross validation.	[7M]
	b)	Define and explain Optimal prediction function for Squared Error Loss.	[7M]

UNIT-II

3.	a)	What is Bayes theorem? Explain Naïve bayes with an example.	[7M]
	b)	What is ranking in binary classification in Machine Learning? What is the best algorithm for raking?	[7M]
		(OR)	
4.	a)	What is the purpose of sigmoid function in Logistic Regression? Explain.	[7M]
	b)	Discuss about multi class classification technique.	[7M]

UNIT-III

5.	a)	What is Bagging and pasting? Explain it's implementation with scikit-learn.	[7M]
	b)	Define Boosting? Explain about Gradient Boosting technique.	[7M]
		(OR)	
6.	a)	What are support vectors? Describe Large margin classification in SVM.	[7M]
	b)	Explain about Naïve Bayes classifier algorithm with an example.	[7M]

UNIT-IV

7.	a)	How can we use clustering for image segmentation? Explain.	[7M]
	b)	What is a Gaussian mixture? What tasks can you use it for? Explain.	[7M]
		(OR)	
8.	a)	Explain the process of reducing the dimension by using Manifold Learning.	[7M]
	b)	Can PCA be used to reduce the dimensionality of a highly nonlinear dataset? Explain	[7M]

UNIT-V

9.	a)	Explain about Perceptron ANN architecture with a neat sketch.	[7M]
	b)	Elaborate the steps in processing data with TensorFlow.	[7M]
		(OR)	
10.	a)	What are the benefits of splitting a large dataset into multiple files? Explain about tf.keras while using dataset?	[7M]
	b)	With neat sketch explain Chaining dataset transformations.	[7M]

Code No: R2032051 **R20** SET -4

III B. Tech II Semester Regular Examinations, July -2023
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Time: 3 hours Max. Marks: 70

Answer any **FIVE** Questions **ONE** Question from **Each unit**
All Questions Carry Equal Marks
*****

UNIT-I

1.	a)	Compare and contrast Instance-Based and Model-Based Learning	[7M]
	b)	Explain the process of Machine Learning step by step.	[7M]
		(OR)	
2.	a)	What is Empirical Risk Minimization? Explain Regularized and Structural risk minimizations?	[7M]
	b)	Write about Sampling distribution of an estimator.	[7M]
		UNIT-II	
3.	a)	Write and explain Linear regression with an example.	[7M]
	b)	What is the Sigmoid function? Where it can be used? Explain.	[7M]
		(OR)	
4.	a)	What is Overfitting? Explain about SVM algorithm to overcome it?	[7M]
	b)	Discuss about Linear regression with an example.	[7M]
		UNIT-III	
5.	a)	Illustrate the stacking mechanism in ensemble techniques.	[7M]
	b)	What is Bagging technique? Explain about Random Forest Algorithm.	[7M]
		(OR)	
6.	a)	What is Linear classifier? Explain SVM linear classification.	[7M]
	b)	What is Kernel trick? Describe polynomial kernel function.	[7M]
		UNIT-IV	
7.	a)	What are the main applications of clustering algorithms? Illustrate.	[7M]
	b)	How can we use clustering for semi-supervised learning? Explain	[7M]
		(OR)	
8.	a)	Explain the concept of PCA for Compression.	[7M]
	b)	How can you evaluate the performance of a dimensionality reduction algorithm on your dataset? Explain.	[7M]
		UNIT-V	
9.	a)	Explain about Multi Layer Perceptron (MLP) ANN architecture.	[7M]
	b)	How is data loaded with TesorFlow? Illustrate the steps.	[7M]
		(OR)	
10.	a)	What types of neural network layers does Keras support? Explain them.	[7M]
	b)	Discuss about shuffle() method in Keras.	[7M]