Code No: **R1642053** **R16** **Set No. 1**

IV B.Tech II Semester Regular/Supplementary Examinations, June - 2022

MACHINE LEARNING

(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B

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PART–A *(14 Marks)*

1. a) What problem can be solved by machine learning? [2]
   b) What is regression? [2]
   c) Give the significance of decision tree. [2]
   d) Define linear model. [2]
   e) What are probabilistic models? [3]
   f) How neural networks are represented in computer? [3]

PART–B *(4x14 = 56 Marks)*

2. a) Explain the features of the machine learning. [7]
   b) What is binary classification? Explain scoring and ranking. [7]

3. a) Differentiate between unsupervised and descriptive learning [7]
   b) Explain i) multi-class classification ii) multi-class scores and probabilities [7]

4. a) What is decision tree? How is it used in learning? Explain with an example [7]
   b) Compare first order rule earning with descriptive rule learning. [7]

5. a) Explain heuristic learning algorithm for linear classifiers. [7]
   b) Compare and contrast clustering with classification. [7]

6. a) What is normal distribution and what are the properties of Normal distribution? [7]
   b) Explain the probabilistic model for categorical data. [7]

7. a) What is dimensionality reduction? What are the benefits of applying dimensionality reduction? [7]
   b) Discuss various problems encountered in neural network learning. [7]

Code No: **R1642053** **R16** **Set No. 2**

IV B.Tech II Semester Regular/Supplementary Examinations, June - 2022

MACHINE LEARNING

(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B

*****

PART–A *(14 Marks)*

1.	a)	What are the advantages of machine learning?	[2]
	b)	Define classification	[2]
	c)	What is first order rule learning?	[2]
	d)	Give the significance of least squares method.	[2]
	e)	What is normal distribution in Machine learning?	[3]
	f)	What is the use of back propagation algorithm?	[3]

PART–B *(4x14 = 56 Marks)*

2.	a)	Explain the components of machine learning model	[7]
	b)	Compare Regression analysis with cluster analysis	[7]
3.	a)	What is hypothesis state concept of hypothesis space? How does it help in concept learning?	[7]
	b)	How to handle more than two classes? Explain.	[7]
4.	a)	What are the tree -based models in machine learning? Give their features.	[7]
	b)	How does the learning process differ from ordered rule list to unordered rule list	[7]
5.	a)	Explain in detail about Support vector machines	[7]
	b)	How to obtaining Probabilities from Linear classifiers: Illustrate	[7]
6.	a)	Difference between the terms “Probability” and “Likelihood”, give the examples for both.	[7]
	b)	How bagging and boosting are used to reduce variance? Give an example.	[7]
7.	a)	Explain dimensionality reduction techniques in detail	[7]
	b)	Why you use PCA? Discuss some advantages and disadvantages of PCA	[7]

Code No: **R1642053** **R16** **Set No. 3**

IV B.Tech II Semester Regular/Supplementary Examinations, June - 2022

MACHINE LEARNING

(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B

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PART–A *(14 Marks)*

1. a) What is binary splitting? [2]
   b) Explain unsupervised ML [2]
   c) List out the different types of nodes in Decision Trees [2]
   d) Define hierarchical clustering [2]
   e) What is bagging? [3]
   f) What are the advantages of back propagation? [3]

PART–B *(4x14 = 56 Marks)*

2. a) Explain the models of output in machine learning [7]
   b) How binary classification is performed on data? [7]

3. a) What is concept learning? Describe the role of hypothesis space in it. [7]
   b) What is regression? Explain types of regression [7]

4. a) What is First-order rule learning in machine learning? Explain witan example [7]
   b) Illustrate the process of descriptive rule learning with an example. [7]

5. a) How does perceptron act as a heuristic learning algorithm for linear classifier? Explain [7]
   b) Write about Hierarchical clustering with an example [7]

6. a) What is the necessity of feature transformation in learning? [7]
   b) Discuss in detail about probabilistic models with hidden variable. [7]

7. a) What is Artificial Neural Network? Explain architecture of Artificial neural network [7]
   b) How does Artificial neural network works, and how it differs to Biological neural network. [7]

Code No: **R1642053** **R16** **Set No. 4**

IV B.Tech II Semester Regular/Supplementary Examinations, June - 2022

MACHINE LEARNING

(Computer Science and Engineering)

Time: 3 hours **Max. Marks: 70**

Question paper consists of Part-A and Part-B
Answer ALL sub questions from Part-A
Answer any FOUR questions from Part-B

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PART–A *(14 Marks)*

1.	a)	What is class probability estimation	[2]
	b)	Define binary classification	[2]
	c)	What are various types of estimates?	[2]
	d)	Give the role of kernel function in SVM.	[2]
	e)	What is feature transformation?	[3]
	f)	What is the necessity of dimensionality reduction?	[3]

PART–B *(4x14 = 56 Marks)*

2.	a)	Discuss: i) scoring and ranking ii) visualising classification performance	[7]
	b)	How does machine learning differ from data mining? Explain with an example.	[7]
3.	a)	How does regression is used as a classifier? Give its classification.	[7]
	b)	What are the factors affecting concept learning? Explain them.	[7]
4.	a)	What is learning ordered rule list? Explain with an example	[7]
	b)	How does tree learning assist in variance reduction?	[7]
5.	a)	Explain about distance based clustering with an example	[7]
	b)	How to obtain probabilities from linear classifier? Explain with an example.	[7]
6.	a)	Discus about various probabilistic models used in machine learning algorithms.	[7]
	b)	Difference between Bagging and Boosting, write the implementation steps for Bagging.	[7]
7.	a)	Why do we need Backpropagation in multilayer neural networks	[7]
	b)	How does PCA used in dimensionality reduction? Explain.	[7]