

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 learning 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]

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**Set No. 2**

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**(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 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]

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**Set No. 3**

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**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 with an 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]

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**Set No. 4**

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**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 [7]  
ii) visualising classification performance
- 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]