Code No: R1941053　　**R19**　　Set No. 1

IV B. Tech I Semester Regular Examinations, November – 2022
MACHINE LEARNING (COMMON TO CSE & IT)
(Computer Science and Engineering)
Time: 3 hours　　　　　　　　　　　　　　　　　　　　　Max. Marks: 75

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

1	a)	With an example, explain about classification and ranking.	[7]
	b)	What kind of problems can Machine Learning solve?	[8]

(OR)

|			
2	a)	"Machine Learning Can't Solve Every Problem". Is this statement correct? Give justification to your answer with proper explanation.	[7]
	b)	What are the different types of a Machine Learning models?	[8]

UNIT-II

3		Illustrate Occam's razor and relate the importance of Occam's razor with respect to ID3 algorithm.	[15]

(OR)

4	a)	Which method prevents over fitting in decision trees?	[7]
	b)	Explain in detail about various categories of splitting the node in decision tree construction.	[8]

UNIT-III

5	a)	Write the different Models of learn ability.	[7]
	b)	What are first order rules? Explain about first order rule learning	[8]

(OR)

6	a)	Explain Rule set for Ranking and Probability estimation	[7]
	b)	Discuss in detail about Learning Ordered Rule Lists.	[8]

UNIT-IV

7	a)	Derive the Back propagation rule considering the training rule for Output Unit weights and Training Rule for Hidden Unit weights.	[7]
	b)	What are the difficulties in applying Gradient Descent.	[8]

(OR)

8	a)	What is the significance of optimal separating hyper plane in SVM?	[7]
	b)	Differentiate between Gradient Descent and Stochastic Gradient Descent.	[8]

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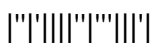
UNIT-V

9 a) Explain the K – nearest neighbour algorithm for approximating a [7] discrete – valued function f : Hn→ V with pseudo code

    b) Explain the concept of Bayes theorem with an example. [8]

(OR)

10 a) Explain Bayesian belief network and conditional independence with [7] example.

    b) Give a brief note on Instance-Based Learning. [8]

Code No: R1941053 **R19** Set No. 2

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Time: 3 hours   Max. Marks: 75

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

UNIT-I

1	a)	Discuss about beyond Conjunctive concepts using first-order logic	[7]
	b)	Differentiate between Supervised and Unsupervised learning.	[8]

(OR)

|			
2	a)	Explain the two uses of features in machine learning.	[7]
	b)	Distinguish between inductive bias and estimation bias.	[8]

UNIT-II

3	a)	How do you know if a decision tree is over fitting?	[7]
	b)	Explain the various issues in Decision tree Learning	[8]

(OR)

4	a)	Explain the various methods to perform cross validation.	[7]
	b)	What are the benefits of pruning in decision tree induction? Explain different approaches to tree pruning?	[8]

UNIT-III

5	a)	Define VC dimension. Show that an axis aligned rectangle can shatter 4 points in 2 dimension.	[7]
	b)	How do you represent induction as inverted deduction?	[8]

(OR)

6	a)	Discuss about First-Order rule learning in detail.	[7]
	b)	Give a brief note on PAC learning	[8]

UNIT-IV

7	a)	Write the algorithm for Back propagation.	[7]
	b)	What are the conditions in which Gradient Descent is applied?	[8]

(OR)

8	a)	Explain how Support Vector Machine can be used for classification of linearly separable data	[7]
	b)	Discuss the Perceptron training rule in detail.	[8]
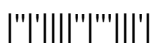
**UNIT-V**

9 a) Explain in detail about multilayer neural networks and back propagation algorithm [7]

   b) Discuss the major drawbacks of K-nearest Neighbour learning algorithm and how it can be corrected [8]

(OR)

10 a) What do you mean by bayesian belief network? Explain with a suitable example. [7]

   b) How the presence of hidden or latent variables affect the learning of probabilistic models. [8]
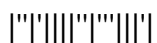
Code No: R1941053 **R19** Set No. 3

IV B. Tech I Semester Regular Examinations, November – 2022
MACHINE LEARNING (COMMON TO CSE & IT)
(Computer Science and Engineering)

Time: 3 hours   Max. Marks: 75

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

UNIT-I

1	a)	What are the basic design issues and approaches to machine learning?	[7]
	b)	Discuss any four examples of machine learning applications.	[8]

(OR)

|			
2	a)	Contrast the hypothesis space search in ID3 and candidate elimination algorithm.	[7]
	b)	Explain the methods for comparing the accuracy of two hypotheses.	[8]

UNIT-II

3	a)	Give a brief note on learning curves.	[7]
	b)	What type of problems are best suited for decision tree learning.	[8]

(OR)

4	a)	Discuss the effect of reduced Error pruning in decision tree algorithm.	[7]
	b)	Write short notes on statistical hypothesis testing.	[8]

UNIT-III

5	a)	Enumerate Propositional and First-Order logic.	[7]
	b)	Write a short notes on hypothesis spaces	[8]

(OR)

6		Illustrate on Golem in detail.	[15]

UNIT-IV

7	a)	Under what conditions the perceptron rule fails and it becomes necessary to apply the delta rule.	[7]
	b)	Describe the significance of Kernal functions in SVM. List any two kernel functions	[8]
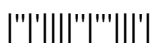
(OR)
8 a) Derive the Gradient Descent Rule [7]
b) Explain how to learn Multilayer Networks using Gradient Descent [8]
Algorithm.

UNIT-V

9 a) Write short notes on Parameter smoothing [7]
b) Describe K-nearest Neighbour learning algorithm for continues valued [8]
target function.

(OR)
10 a) How do you classify text using Bayes Theorem [7]
b) Distinguish between Generative and discriminative training [8]

Code No: R1941053 **R19** Set No. 4

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ONE Question from Each unit
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*****

UNIT-I

1	a)	What do you mean by Concept Learning? Explain in detail.	[7]
	b)	Explain the inductive biased hypothesis space and unbiased learner	[8]

(OR)

2	a)	Distinguish between supervised learning and reinforcement learning.	[6]
	b)	How is Candidate Elimination algorithm different from Find-S Algorithm?	[9]

**UNIT-II**

3	a)	Interpret the design tree algorithm with respect to Over fitting the data.	[7]
	b)	Explain in detail about Decision Tree with an example.	[8]

(OR)

4	a)	Relate Inductive bias with respect to Decision tree learning.	[7]
	b)	Explain with a suitable example. How information gain measure is used for best splitting attribute.	[8]

UNIT-III

5	a)	Discuss in detail about Foil.	[7]
	b)	Illustrate on Progol in detail.	[8]

(OR)

6	a)	How VC dimension is related with no of training examples used for learning.	[7]
	b)	Write about Inverse resolution.	[8]

UNIT-IV

7	a)	Explain the concept of a Perceptron with a neat diagram	[7]
	b)	What are the type of problems in which Artificial Neural Network can be applied	[8]

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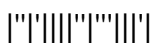
(OR)

8   a)   State the mathematical formulation of the SVM problem. Give an   [7]
           outline of the method for solving the problem.
     b)   Discuss in detail on gradient descent training with a suitable example.   [8]

UNIT-V

9   a)   Give a brief note on Logisitic regression   [7]
     b)   Define (i) Prior Probability (ii) Conditional Probability (iii) Posterior   [8]
           Probability

(OR)

10   a)   Explain Naïve Bayes Classifier with an Example.   [7]
     b)   Explain the back propagation algorithm in training neural networks.   [8]