



Sardar Patel Institute of Technology
 Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai -400058,
 India
 (Autonomous College Affiliated to University of Mumbai)

End Semester Examination

Max. Marks: 20
Class: B.E.
Course Code: EC433

Duration: 1 Hr
Semester: VII
Branch: ETRX & EXTC

Name of the Course: Artificial Intelligence and Machine Learning

Instruction:

- (1) Attempt any four questions
- (2) Draw necessary diagram

Q No.		Ma x. Mar ks	B L	CO	PI										
Q.1 a)	i)What do you Multicollinearity mean by? Identify the regularization technique which deals with Multicollinearity. ii)What are the requirements of clustering algorithms?	3	3	CO2	2.2.4										
b)	Find linear regression equation for the following two sets of data:	2	2	CO1	2.1.2										
	<table><tr><td>x</td><td>2</td><td>4</td><td>6</td><td>8</td></tr><tr><td>y</td><td>3</td><td>7</td><td>5</td><td>10</td></tr></table>	x	2	4	6	8	y	3	7	5	10				
x	2	4	6	8											
y	3	7	5	10											
Q.2	How to identify High Variance or High Bias from given figure	5	4	CO1	2.2.2										
	<p>The graph plots Error on the y-axis against Training instances on the x-axis. Two curves are shown: Training Error, which decreases as training instances increase, and Test Error, which initially decreases and then increases, forming a U-shape. A horizontal line marks the 'Acceptable Test Error' level. A circle labeled 'High Variance' is positioned where the Test Error is high and the Training Error is low. Another circle labeled 'High Bias' is positioned where both Test and Training errors are high.</p>														
Q.3	Apply the suitable SVM on the following datapoints	5	3	CO2	2.2.2										



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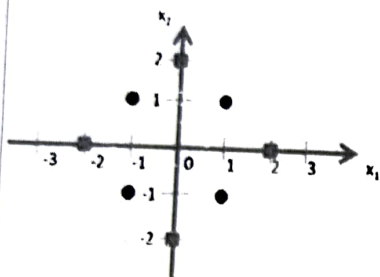
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Q.4 What are the characteristics of the problems suited for decision tree learning?

5

4

CO2

2.2.1

Build the decision tree for the Boolean functions

$A \vee [B \wedge C]$

$A \text{ XOR } B$

$[A \wedge B] \vee [C \wedge D]$

Q.5 Apply the Naïve Bay's classifier on the following dataset.

5

3

CO2

2.2.2

Weather	Car	Class
Sunny	Working	Go-out
Rainy	Broken	Go-out
Sunny	Working	Go-out
Sunny	Working	Go-out
Sunny	Working	Go-out
Rainy	Broken	Stay-home
Rainy	Broken	Stay-home
Sunny	Working	Stay-home
Sunny	Broken	Stay-home
Rainy	Broken	Stay-home