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Internal Assessment Test 1 - Mar 2026

Sub:	Machine Learning				Sub Code:	BCS602	Branch:	ISE																																			
Date:	03/03/2026	Duration:	90 min	Max Marks:	50	Sem/Sec:	VI / A, B & C	OBE																																			
<u>Answer any FIVE FULL Questions</u>								MARKS	CO	RBT																																	
1a	What are the three main reasons for the popularity of Machine Learning? Explain and sketch the Knowledge pyramid representation in detail						[06]	CO1	L1																																		
1b	Consider the set of values: $V = \{ 28,55,85,100\}$ Apply the Min-Max procedure and map the marks to a new range of 0-1.						[04]	CO1	L3																																		
2a	Explain in detail the different types of Machine Learning, with examples for each.						[06]	CO1	L2																																		
2b	Explain Univariate data analysis and Visualization in detail.						[04]	CO1	L2																																		
3a	Write the Candidate Elimination Algorithm in step-by-step form						[05]	CO2	L2																																		
3b	For the student's age list $\{12, 18, 22, 27, 31, 35, 40, 44, 50\}$ Find the IQR and draw the Box plot.						[05]	CO2	L3																																		
4a	Explain the K-Nearest Neighbour with a visual representation and write the algorithm steps in detail.						[05]	CO3	L2																																		
4b	Consider the following dataset with two features, x and y. The target classes are A and B. Predict the class for the given test instance (4,3) using the Nearest Centroid Classifier						[05]	CO3	L3																																		
		<table border="1"> <thead> <tr> <th>X</th> <th>Y</th> <th>Class</th> </tr> </thead> <tbody> <tr><td>1</td><td>2</td><td>A</td></tr> <tr><td>2</td><td>3</td><td>A</td></tr> <tr><td>3</td><td>1</td><td>A</td></tr> <tr><td>6</td><td>7</td><td>B</td></tr> <tr><td>7</td><td>8</td><td>B</td></tr> <tr><td>8</td><td>6</td><td>B</td></tr> </tbody> </table>				X	Y	Class	1	2	A	2	3	A	3	1	A	6	7	B	7	8	B	8	6	B																	
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5	Let the data points be $\begin{pmatrix} 2 \\ 6 \end{pmatrix}$ and $\begin{pmatrix} 1 \\ 7 \end{pmatrix}$. Apply PCA and find the transformed data. Apply reverse and prove that PCA Works.						[10]	CO2	L3																																		
6a	Apply the Find-S algorithm for the given training dataset below, which consists of 5 instances, to identify the most specific hypothesis consistent with positive examples						[06]	CO2	L3																																		
		<table border="1"> <thead> <tr> <th>Eyes</th> <th>Nose</th> <th>Head</th> <th>Color</th> <th>Hair</th> <th>Smile</th> </tr> </thead> <tbody> <tr><td>Round</td><td>Small</td><td>Round</td><td>Blue</td><td>Yes</td><td>Yes</td></tr> <tr><td>Square</td><td>Small</td><td>Round</td><td>Blue</td><td>Yes</td><td>Yes</td></tr> <tr><td>Round</td><td>Long</td><td>Square</td><td>Blue</td><td>Yes</td><td>Yes</td></tr> <tr><td>Square</td><td>Small</td><td>Round</td><td>Green</td><td>No</td><td>No</td></tr> <tr><td>Round</td><td>Small</td><td>Round</td><td>Blue</td><td>Yes</td><td>Yes</td></tr> </tbody> </table>				Eyes	Nose	Head	Color	Hair	Smile	Round	Small	Round	Blue	Yes	Yes	Square	Small	Round	Blue	Yes	Yes	Round	Long	Square	Blue	Yes	Yes	Square	Small	Round	Green	No	No	Round	Small	Round	Blue	Yes	Yes		
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6b	Write a note on model performance with all the metrics						[04]	CO2	L3																																		

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