



Session: EVEN SEM (2022-23)

Class Test - 2	Course Name: B Tech CSE-A, CSE-DS	Semester: 6 th
Time: 2 Hours	Subject Name: AIML Subject Code: CS102603	Min Marks: 14 Max Marks: 40

Note: Attempt all questions. Parts (a) are compulsory & attempt any two parts from (b), (c) & (d).

Course Outcome:

CO1 Understand a wide variety of learning algorithms.

CO2 Understand how to evaluate models generated from data

Q. No.	Questions	Marks	CO	B L	PI									
1	<p>a</p> <p>Consider a confusion matrix made for a classifier that classifies people based on whether they speak English or Spanish.</p> <table border="1" style="margin: 20px auto;"> <tr> <td></td><th>English Speaker</th><th>Spanish Speaker</th></tr> <tr> <th>English Speaker</th><td>86</td><td>12</td></tr> <tr> <th>Spanish Speaker</th><td>10</td><td>79</td></tr> </table>		English Speaker	Spanish Speaker	English Speaker	86	12	Spanish Speaker	10	79	4	CO1	L2	1.3.1
	English Speaker	Spanish Speaker												
English Speaker	86	12												
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1	<p>b</p> <p>Elaborate decision tree. Suppose a feature has 8 "yes" and 4 "no" initially, after the first split the left node gets 5 'yes' and 2 'no' whereas right node gets 3 'yes' and 2 'no'.</p> <pre> graph TD Root((8 yes, 4 no)) -- Feature 1 --> Left((5 yes, 2 no)) Root -- Feature 1 --> Right((3 yes, 2 no)) Left -- Feature 2 --> Left_L((5 yes)) Left -- Feature 2 --> Left_R((2 no)) Right -- Feature 3 --> Right_L((3 yes)) Right -- Feature 3 --> Right_R((2 no)) </pre>	8	CO2	L2	1.3.1									

1	c	What is Support Vector Machine explain its algorithm. Explain KNN algorithm with example.	8	CO3	L2	1.3.1																																																	
1	d	<p>Explain Naive Bayes Algorithm</p> <table border="1"> <thead> <tr> <th>Weather</th> <th>Play</th> <th>Weather</th> <th>Play</th> </tr> </thead> <tbody> <tr> <td>Sunny</td> <td>No</td> <td>Rainy</td> <td>No</td> </tr> <tr> <td>Overcast</td> <td>Yes</td> <td>Sunny</td> <td>Yes</td> </tr> <tr> <td>Rainy</td> <td>Yes</td> <td>Rainy</td> <td>Yes</td> </tr> <tr> <td>Sunny</td> <td>Yes</td> <td>Sunny</td> <td>No</td> </tr> <tr> <td>Sunny</td> <td>Yes</td> <td>Overcast</td> <td>Yes</td> </tr> <tr> <td>Overcast</td> <td>Yes</td> <td>Overcast</td> <td>Yes</td> </tr> <tr> <td>Rainy</td> <td>No</td> <td>Rainy</td> <td>No</td> </tr> </tbody> </table> <p>Players will play if the weather is sunny. Is this statement correct?</p>	Weather	Play	Weather	Play	Sunny	No	Rainy	No	Overcast	Yes	Sunny	Yes	Rainy	Yes	Rainy	Yes	Sunny	Yes	Sunny	No	Sunny	Yes	Overcast	Yes	Overcast	Yes	Overcast	Yes	Rainy	No	Rainy	No	8	CO3	L1	2.1.2																	
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2	a	Explain briefly about partitioning clustering with example?	4	CO2	L3	2.1.3																																																	
2	b	<p>Define Density based model clustering. Solve the given values and find number of cluster, boundary points, noise points and core points where value of $\epsilon < 1.5$, Minimum points = 3, values as follows:</p> <table border="1"> <thead> <tr> <th>pts</th> <th>A</th> <th>B</th> <th>C</th> <th>D</th> <th>E</th> <th>F</th> </tr> </thead> <tbody> <tr> <td>A</td> <td>0</td> <td>0.7</td> <td>5.7</td> <td>3.6</td> <td>4.2</td> <td>3.2</td> </tr> <tr> <td>B</td> <td>0.7</td> <td>0</td> <td>4.9</td> <td>2.9</td> <td>2.5</td> <td>2.5</td> </tr> <tr> <td>C</td> <td>5.7</td> <td>4.9</td> <td>0</td> <td>2.2</td> <td>1.4</td> <td>2.5</td> </tr> <tr> <td>D</td> <td>3.6</td> <td>2.9</td> <td>2.2</td> <td>0</td> <td>1</td> <td>0.5</td> </tr> <tr> <td>E</td> <td>4.2</td> <td>2.5</td> <td>1.4</td> <td>1</td> <td>0</td> <td>1.1</td> </tr> <tr> <td>F</td> <td>3.2</td> <td>2.5</td> <td>2.5</td> <td>0.5</td> <td>1.1</td> <td>0</td> </tr> </tbody> </table>	pts	A	B	C	D	E	F	A	0	0.7	5.7	3.6	4.2	3.2	B	0.7	0	4.9	2.9	2.5	2.5	C	5.7	4.9	0	2.2	1.4	2.5	D	3.6	2.9	2.2	0	1	0.5	E	4.2	2.5	1.4	1	0	1.1	F	3.2	2.5	2.5	0.5	1.1	0	8	CO4	L2	1.3.1
pts	A	B	C	D	E	F																																																	
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2	c	<p>Explain Hierarchical Clustering with its types. Find the cluster using complete link technique. Use Euclidean distance & draw the dendrogram.</p> <table border="1"> <thead> <tr> <th></th> <th>X</th> <th>Y</th> </tr> </thead> <tbody> <tr> <td>P1</td> <td>0.40</td> <td>0.53</td> </tr> <tr> <td>P2</td> <td>0.22</td> <td>0.38</td> </tr> <tr> <td>P3</td> <td>0.35</td> <td>0.32</td> </tr> </tbody> </table>		X	Y	P1	0.40	0.53	P2	0.22	0.38	P3	0.35	0.32	8	CO5	L2	1.3.1																																					
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2	d	Explain Markov Model and Hidden Markov Model with example.	8	CO2	L3	2.1.3																																																	