


Name:												
Enrolment No:												
UPES End Semester Examination, May 2023 Course: Artificial Intelligence and Machine Learning in Healthcare Semester: II Program: M.Sc.(MICRO) / M.Sc.(N&D) Time : 03 hrs. Course Code: CSAI7009 Max. Marks: 100												
Instructions: All the questions are compulsory.												
SECTION A (5Qx4M=20Marks)												
S. No.		Marks	CO									
Q 1	What is learning? How do you relate learning to AI-ML?	2+2=4	CO1									
Q 2	What is missing data? What are the different methods available for handling missing data?	4	CO2									
Q 3	Who is the father of AI? Discuss the role of AI in healthcare?	1+3=4	CO4									
Q 4	<p style="text-align: center;">Actual Values</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td></td> <td style="text-align: center;">1</td> <td style="text-align: center;">0</td> </tr> <tr> <td style="text-align: center;">1</td> <td style="text-align: center;">540</td> <td style="text-align: center;">150</td> </tr> <tr> <td style="text-align: center;">0</td> <td style="text-align: center;">110</td> <td style="text-align: center;">200</td> </tr> </table> <p style="margin-left: 20px;">Predicted Values</p> <p>Find the precision and recall from the above confusion matrix.</p>		1	0	1	540	150	0	110	200	2+2=4	CO2
	1	0										
1	540	150										
0	110	200										
Q 5	Why do we need data in Machine learning? Give one example of supervised learning algorithm.	3+1=4	CO3									
SECTION B (4Qx10M= 40 Marks)												
Q 6	<p>What is an expert system? Give an example of expert system. What are the roles of training data and testing data? (Marks:2+3+5=10)</p> <p style="text-align: center;">Or</p> <p>What is the potential of AI in clinical practice? Explain the three common distance measures used in machine learning? Discuss the uses of confusion matrix. (Marks: 5+3+2=10)</p>	10	CO1									
Q 7	Discuss five major tasks followed in data pre-processing	10	CO2									

Q 8	Explain different binning methodology to smooth the given data, 8 16, 9, 15, 21, 21, 24, 30, 26, 27, 30, 34.	10	CO5																								
Q 9	What are the different challenges of healthcare system in India.	10	CO4																								
SECTION-C (2Qx20M=40 Marks)																											
Q 10	<p>Describe the KNN algorithm. Explain the algorithm using the following data. Assume the value of K is 5. Predict the class of a new data whose brightness is 20 and saturation is 35.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>BRIGHTNESS</th> <th>SATURATION</th> <th>CLASS</th> </tr> </thead> <tbody> <tr> <td>40</td> <td>20</td> <td>Red</td> </tr> <tr> <td>50</td> <td>50</td> <td>Blue</td> </tr> <tr> <td>60</td> <td>90</td> <td>Blue</td> </tr> <tr> <td>10</td> <td>25</td> <td>Red</td> </tr> <tr> <td>70</td> <td>70</td> <td>Blue</td> </tr> <tr> <td>60</td> <td>10</td> <td>Red</td> </tr> <tr> <td>25</td> <td>80</td> <td>Blue</td> </tr> </tbody> </table> <p style="text-align: right;">(Marks: 7+13=20)</p> <p style="text-align: center;">Or</p> <p>What is EHR? What are the advantages of electronic health records? What are the different types of AI? Explain the advantages and disadvantages of AI.</p> <p style="text-align: right;">(Marks: 2+7+5+6=20)</p>	BRIGHTNESS	SATURATION	CLASS	40	20	Red	50	50	Blue	60	90	Blue	10	25	Red	70	70	Blue	60	10	Red	25	80	Blue	20	CO3
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Q 11	How does machine learn? What is dimensionality reduction? What is curse of dimensionality problem? Explain how to choose the right ML algorithm for a particular task.	5+3+2+10=20	CO2+CO3																								