



VIT

Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SLOT: D2+TD2

REG. NO.: 22BME

SCHOOL OF MECHANICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST - 2
WINTER SEMESTER 2024-2025

Programme Name & Branch : B. Tech - BMA/BME/BMM
Course Code and Course Name : BMEE407L - Artificial Intelligence
Course Faculty : Prof. Giriraj M., Prof. Jeevanantham A.K.,
Prof. Sudhakara Pandian R., Prof. Rajamurugan G.
Course code : VL2024250503565, 3566, 3567, 3568,
Date of Examination : 19-03-2025
Exam Duration: 90 minutes **Maximum Marks: 50**

General instruction(s): OPEN BOOK Examination

- Answer All Questions
- M - Max mark; CO - Course Outcome; BL - Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes Statements
CO. 3: Construct the logical agents and familiar in the application of fuzzy in AI
CO. 4: Design the decision making algorithm with the reasoning of uncertainties
CO. 5: Develop machine learning programs based on supervised, unsupervised and reinforced learning.

Q. No	Question	M	CO	BL																																																																																										
1.	Demonstrate any two Defuzzification methods with suitable examples.	10	3	2																																																																																										
2.	Consider the training dataset below. Your goal is to build a naïve Bayes classifier to predict whether you can play golf or not. <table><tr><th>Sl. No.</th><th>Outlook</th><th>Temperature</th><th>Humidity</th><th>Windy</th><th>Play Golf</th></tr><tr><td>1</td><td>Rainy</td><td>Hot</td><td>High</td><td>FALSE</td><td>No</td></tr><tr><td>2</td><td>Rainy</td><td>Hot</td><td>High</td><td>TRUE</td><td>No</td></tr><tr><td>3</td><td>Overcast</td><td>Hot</td><td>High</td><td>FALSE</td><td>Yes</td></tr><tr><td>4</td><td>Sunny</td><td>Mild</td><td>High</td><td>FALSE</td><td>Yes</td></tr><tr><td>5</td><td>Sunny</td><td>Cool</td><td>Normal</td><td>FALSE</td><td>Yes</td></tr><tr><td>6</td><td>Sunny</td><td>Cool</td><td>Normal</td><td>TRUE</td><td>No</td></tr><tr><td>7</td><td>Overcast</td><td>Cool</td><td>Normal</td><td>TRUE</td><td>Yes</td></tr><tr><td>8</td><td>Rainy</td><td>Mild</td><td>High</td><td>FALSE</td><td>No</td></tr><tr><td>9</td><td>Rainy</td><td>Cool</td><td>Normal</td><td>FALSE</td><td>Yes</td></tr><tr><td>10</td><td>Sunny</td><td>Mild</td><td>Normal</td><td>FALSE</td><td>Yes</td></tr><tr><td>11</td><td>Rainy</td><td>Mild</td><td>Normal</td><td>TRUE</td><td>Yes</td></tr><tr><td>12</td><td>Overcast</td><td>Mild</td><td>High</td><td>TRUE</td><td>Yes</td></tr><tr><td>13</td><td>Overcast</td><td>Hot</td><td>Normal</td><td>FALSE</td><td>Yes</td></tr><tr><td>14</td><td>Sunny</td><td>Mild</td><td>High</td><td>TRUE</td><td>No</td></tr></table> Classify the test data by using the below features: Sunny Outlook, Hot Temperature, Normal Humidity and No Wind.	Sl. No.	Outlook	Temperature	Humidity	Windy	Play Golf	1	Rainy	Hot	High	FALSE	No	2	Rainy	Hot	High	TRUE	No	3	Overcast	Hot	High	FALSE	Yes	4	Sunny	Mild	High	FALSE	Yes	5	Sunny	Cool	Normal	FALSE	Yes	6	Sunny	Cool	Normal	TRUE	No	7	Overcast	Cool	Normal	TRUE	Yes	8	Rainy	Mild	High	FALSE	No	9	Rainy	Cool	Normal	FALSE	Yes	10	Sunny	Mild	Normal	FALSE	Yes	11	Rainy	Mild	Normal	TRUE	Yes	12	Overcast	Mild	High	TRUE	Yes	13	Overcast	Hot	Normal	FALSE	Yes	14	Sunny	Mild	High	TRUE	No	10	4	3
Sl. No.	Outlook	Temperature	Humidity	Windy	Play Golf																																																																																									
1	Rainy	Hot	High	FALSE	No																																																																																									
2	Rainy	Hot	High	TRUE	No																																																																																									
3	Overcast	Hot	High	FALSE	Yes																																																																																									
4	Sunny	Mild	High	FALSE	Yes																																																																																									
5	Sunny	Cool	Normal	FALSE	Yes																																																																																									
6	Sunny	Cool	Normal	TRUE	No																																																																																									
7	Overcast	Cool	Normal	TRUE	Yes																																																																																									
8	Rainy	Mild	High	FALSE	No																																																																																									
9	Rainy	Cool	Normal	FALSE	Yes																																																																																									
10	Sunny	Mild	Normal	FALSE	Yes																																																																																									
11	Rainy	Mild	Normal	TRUE	Yes																																																																																									
12	Overcast	Mild	High	TRUE	Yes																																																																																									
13	Overcast	Hot	Normal	FALSE	Yes																																																																																									
14	Sunny	Mild	High	TRUE	No																																																																																									



VIT

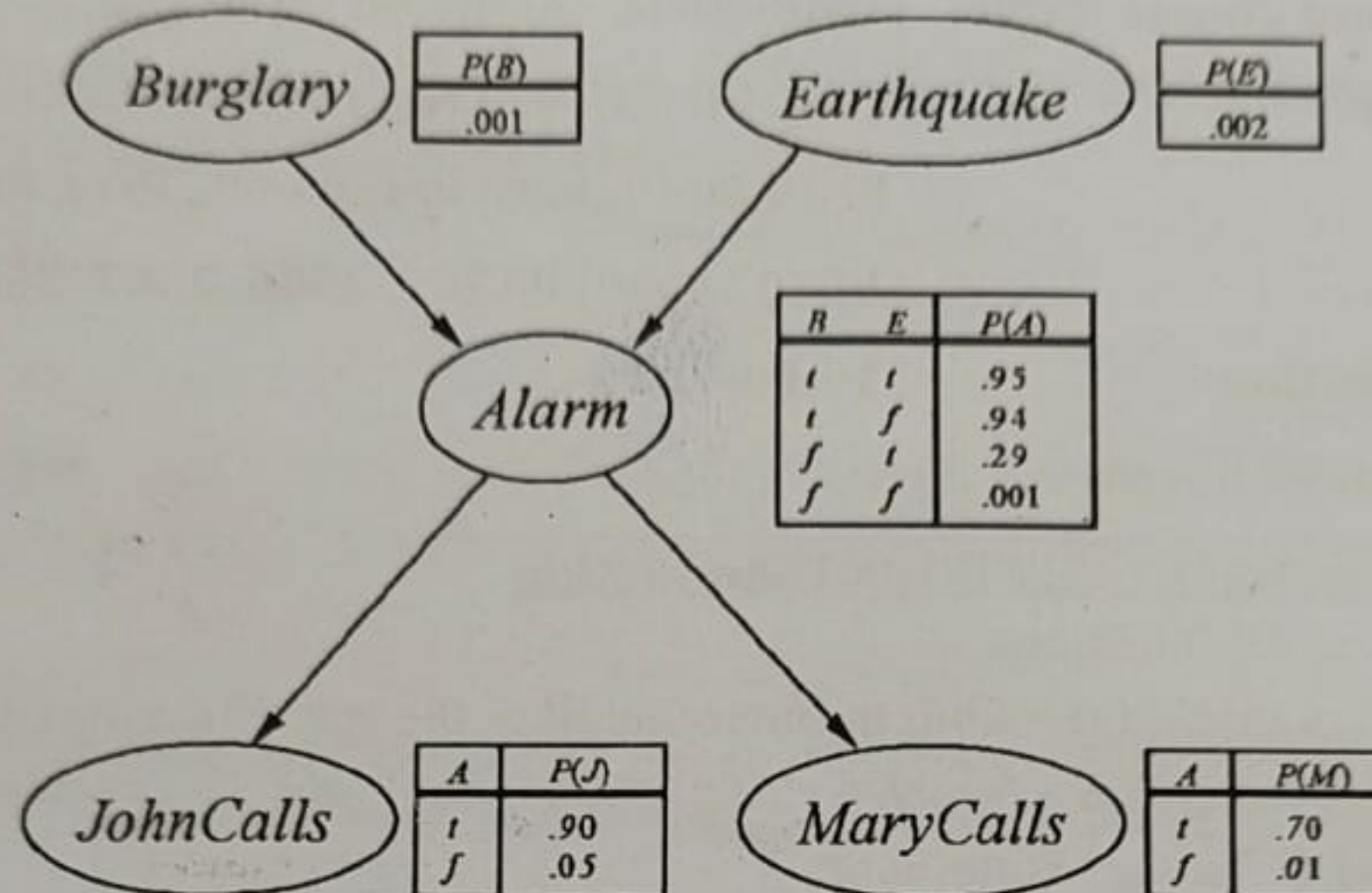
Vellore Institute of Technology
(Deemed to be University under section 3 of UGC Act, 1956)

SLOT: D2+TD2

REG. NO.:

SCHOOL OF MECHANICAL ENGINEERING
CONTINUOUS ASSESSMENT TEST - 2
WINTER SEMESTER 2024-2025

3. Consider the Bayesian network given below.



10 4 4

- a. Neighbour John calls to say an alarm is ringing, but neighbour Marry doesn't call. Sometimes it's set off by minor earthquakes. What is the chance that the alarm was ringing and there was a burglar? (5 Marks)
- b. What is the probability that an alarm has sounded but neither a burglary nor an earthquake has occurred and both John and Marry call? (5 Marks)

4. Points (3, 1), (3, -1), (6,1) and (6, -1) are positively labelled, and the points (1,0), (0,1), (0, -1) and (-1, 0) are negatively labelled. Using Support Vector Machine Algorithm, find the hyperplane and schematically illustrate the same.

10 5 4

5. Apply K means clustering algorithm to cluster the following data points in three groups. The initial centroids are Cluster 1 : (2,10), Cluster 2 : (5, 8), and Cluster 3 : (1, 2).

x	y
2	10
2	5
8	4
5	8
7	5
6	4
1	2
4	9

10 5 3