



VIT

Vellore Institute of Technology
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REG.NO.: 24BNT0014

SCHOOL OF HEALTHCARE SCIENCE AND ENGINEERING
CONTINUOUS ASSESSMENT TEST - I
WINTER SEMESTER 2024-2025

SLOT: B1+TB1

Programme Name & Branch : B.Tech - Health Sciences and Technology
Course Code and Course Name : BHST201L - Artificial Intelligence and Machine Learning in Healthcare
Faculty Name(s) : Kamanasish Bhattacharjee
Class Number(s) : VL2024250506185
Date of Examination : 28/01/2025
Exam Duration : 90 minutes **Maximum Marks: 50**

General instruction(s):

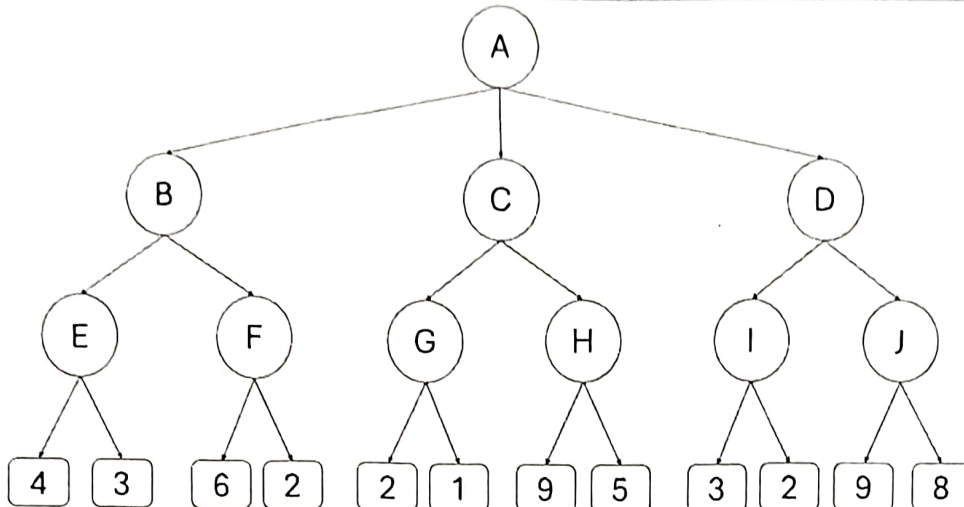
- Answer All Questions
- M - Max mark; CO – Course Outcome; BL – Blooms Taxonomy Level (1 - Remember, 2 - Understand, 3 - Apply, 4 - Analyse, 5 - Evaluate, 6 - Create)
- Course Outcomes (Type the CO statements covered in this question paper. Use the CO number as per the syllabus copy)
 1. Demonstrate understanding of the fundamental concepts and principles of AI and medical data.
 2. Analyze and illustrate how search algorithms play vital role in problem solving in AI.
 3. Demonstrating the use of Supervised, Unsupervised, and Weakly Supervised Learnings in healthcare.

Q. No	Question	M	CO	BL
1.	Write about the various types of healthcare data.	10	1	1
2.	Perform Uniform Cost Search on the directed graph given below and present it in a tabular form with Frontier List, Expand List, and Explored List. [S = Start Node, G = Goal Node] <pre> graph TD S((S)) -- 3 --> A((A)) S -- 2 --> B((B)) S -- 7 --> C((C)) A -- 3 --> D((D)) A -- 8 --> E((E)) B -- 20 --> G((G)) C -- 6 --> G E -- 15 --> G </pre>	10	2	3
3.	Perform Alpha Beta Pruning on the tree given below. After completing the algorithm, show node values, final alpha and beta values for each node, and determine the decision value. What are the pruned nodes in the tree?	10	2	3



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4. a) Though being a classification model, why Logistic Regression is named that way? If you are trying to predict whether a tumour is malignant or benign based on its various features, then which type of Logistic Regression Model you would use and why?

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- b) Heart Disease data of five patients are given below. Using Hamming distance, show how the 3NN classifier with majority voting would classify {Fasting Blood Sugar: 0, Exercise Angina: 1, Resting ECG: 1}

Patient	Fasting Blood Sugar	Exercise Angina	Resting ECG	Heart Disease
Patient1	1	1	1	0
Patient2	1	0	0	1
Patient3	0	1	1	0
Patient4	0	1	0	1
Patient5	1	0	0	1

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5. Prepare a Decision Tree for the following heart attack risk data using Information Gain as the Attribute Selection Measure. Show all the computational steps.

Age	Weight	Smoker	Risk
> 30	> 60	Yes	High
> 30	> 60	No	High
< 30	< 60	Yes	Low
> 30	< 60	No	Low

10

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