



VIT

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

REG.NO.:

SCHOOL OF COMPUTER SCIENCE ENGINEERING AND INFORMATION SYSTEMS
CONTINUOUS ASSESSMENT TEST - I
FALL SEMESTER 2025-2026

SLOT: D1+TD1

Programme Name & Branch : B. Tech (IT)
Course Code and Course Name : BITE308L- Artificial Intelligence
Faculty Name(s) : Prof. Valarmathi B, Prof. Hemalatha S, Prof. Tapan Kumar Das
Class Number(s) : VL2025260103843, 3847, 3848
Date of Examination : 8.10.2025
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
CO3: Apply different knowledge representations and reasoning techniques

Q. No	Question	M	CO	BL
1.	A farmer needs to transport a wolf, a goat, and a cabbage across a river. He has a boat that can carry only himself plus one of the three items. The farmer may only bring one object (W, G, or C) with him as he crosses the river. Nothing is carried if the farmer crosses by himself. If the wolf and goat are left alone without the farmer, the wolf will eat the goat. If the goat and cabbage are left alone without the farmer, the goat will eat the cabbage. The goal is to move all four across safely. Create a Rule-based representation system for the above. Considering the safety rules and boat capacity, generate a valid chain of rules to solve the problem.	10	3	3
2.	Consider the following facts about the Astronomy. 1. The Sun is a star. 2. All stars are celestial bodies. 3. The Sun gives light. 4. Earth orbits the Sun. 5. Earth is a planet. 6. All planets are celestial bodies. 7. The Moon orbits Earth. 8. The Moon is a natural satellite. 9. Jupiter is a planet. 10. Jupiter has rings. Construct semantic net representations for the above facts.	10	3	3
3	A medical expert system is designed to diagnose whether a patient has flu or cold based on symptoms like fever, cough, and body pain. Using propositional logic and inference rules, the system tries to conclude the correct illness. Represent the following statements in propositional logic domain . Using appropriate rules of inference , predict the correct illness. 1. If a patient has fever, cough, and body pain, then the patient has flu. 2. If a patient has cough but no fever, then the patient has cold.	10	3	3



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	3. If a patient has cough but no fever, then the patient has cold. 4. If the patient has flu, then they cannot have cold at the same time. 5. Fact: The patient must have either flu or cold.			
4.	The following statements for "Students and Exams" are given below. 1. All students who study hard will pass the exam. 2. Anyone who passes the exam will get a certificate. 3. If someone is absent, they do not pass the exam. 4. Alice is a student and studies hard. 5. Alice was not absent. Prove that "Alice gets a certificate." is true by Resolution.	10	3	3
5.	The medical diagnosis system (MDS) consists of 4 rules and 3 facts and they are given below. Use forward and back chaining to solve the following problem. 1. $Fever(x) \wedge Cough(x) \rightarrow Flu(x)$ 2. $Flu(x) \rightarrow Weak(x)$ 3. $ColdWeather \rightarrow \forall y(Cold(y))$ 4. $Flu(x) \wedge Weak(x) \rightarrow BedRest(x)$ 5. $Fever(John)$ 6. $Cough(John)$ 7. $ColdWeather$ Is "John needs bed rest." true? Draw a tree to illustrate the search for a proof. (Show the steps clearly).	10	3	3
