VIT

Vellore Institute of Technology

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

School of Computer Science and Engineering

Winter Semester 2023-24

Continuous Assessment Test – II

SLOT:F1+TF1

Programme Name & Branch: M.Tech. (Integrated) Computer Science and Engineering, M.Tech. (Integrated) Computer Science and Engineering with Specialization in Data Science

Course Name & Code: Artificial Intelligence and Expert Systems (CSI3003)

Class Number (s): VL2023240502537, VL2023240502468

Faculty Name (s): Dr. Natarajan P, Dr. Kamanasish Bhattacharjee

Exam Duration: 90 Min. **Maximum Marks: 50**

General instruction(s):

Hand written notes and Text books are allowed

Q. No.	Question	Max Marks
1.	The Figure-1 below shows a Wumpus world containing three pits and one Wumpus. There is an agent in room [1,1]. The goal of the agent is to exit the Wumpus world alive. The agent has to collect the Gold and exit the Wumpus world by reaching room [1,1]. The Wumpus world contains exactly one Wumpus and Three pit. There will be a breeze in the rooms adjacent to the pits, and there will be a stench in the rooms adjacent to Wumpus. Identify the two different paths for the agent to collect the gold and leaving the cave safely. Show the step-by-step movement of the agent from [1, 1] to collect the gold and return back to [1, 1] along with gold for the identified two different path.	10

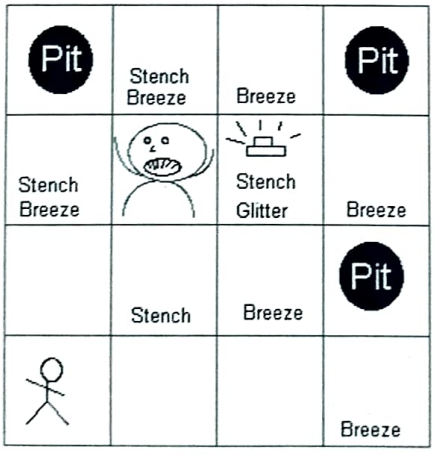

Figure 1

2. Consider the letters T, J and S which represent simple English sentences as follow. 10

T: Tom hit the ball.
J: Jane caught the ball.
S: Spot chased the ball.

By using the above letters, convert the following English statement into Propositional Logic Translation.

a. Tom did not hit the ball.
b. Either Tom hit the ball or Jane caught the ball.
c. Spot chased the ball, but Jane caught it.
d. If Jane caught the ball, then Spot did not chase it.
e. Spot chased the ball if and only if Tom hit the ball.

3. Convert the following English sentence to First order Predicate Logic translation. 10

a. Mary loves everyone.
b. No one talks.
c. Everyone loves everyone.
d. Every student except George smiles.
e. Every student walk or talk.
f. Every student who walks talks.
g. Every student who loves Mary is happy.
h. Every boy who loves Mary hates every boy who Mary loves.
i. Someone loves everyone.
j. Everyone who walks is calm.

4. Logic puzzle about a cat, a mouse, and a piece of cheese. Mouse can't be left alone with cheese; cat can't be left alone with mouse. Can only fit one animal/item on the boat at once. Need to cross all 3 across the river. How do you do it by using Situational Calculus? Reason your answer. 10

5. Consider the three tiles are arranged in a horizontal line with the left most tile is named A, the middle tile is named as B and the right most tile is named as C. You have to plan the cleaning of three tiles using conditional planning. Conditions are at a time only one tile can be cleaned by vacuum cleaner. If the cleaning start from left most tile, then it should reach the right most tile then only return back. If the cleaning start from right most tile, then it should reach the left most tile then only return back. Vacuum cleaner will not start cleaning from the middle tile. Write the conditional plan code/steps for cleaning the three tiles. Draw the And-Or search tree. Check the solution is satisfying using backtracking. 10