BACHELOR OF TECHNOLOGY (CBCS) (2021-COURSE)
B. Tech. Sem - IV Computer Science & Engineering-AI & ML : WINTER : 2024
SUBJECT: FOUNDATIONS OF ARTIFICIAL INTELLIGENCE

Day : Tuesday
Date : 26/11/2024

W-23950-2024

Time : 02:30 PM-05:30 PM
Max. Marks : 60

N.B.

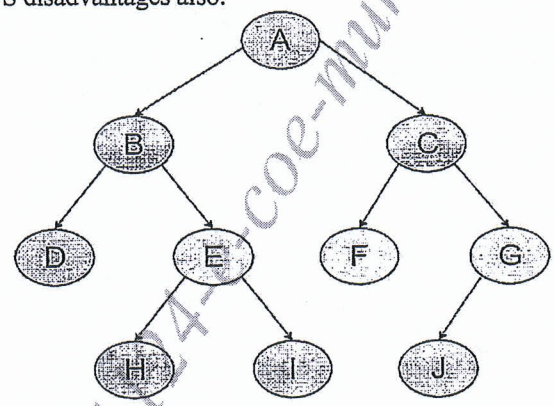
1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Use of non – programmable **CALCULATOR** is allowed.
4) Assume suitable data if necessary.

Q.1 What do you mean by PEAS descriptors? Give PEAS description for a robot soccer player. **(10)**

OR

What are the basic building blocks of Learning agent? Explain each of them with a neat block diagram. **(10)**

Q.2 Apply DFS on following tree with A is start node and H as goal node. List the DFS disadvantages also. **(10)**



OR

Given an initial state and final state in 8-Puzzle: **(10)**

2	8	3
1	6	4
7		5

Initial State

	2	3
1	8	4
7	6	5

Final State

Find the most cost-effective path to reach final state from initial state using A* algorithm. Consider g(n) = depth of node and h(n) = number of misplaced tiles.

Q.3 If SEND + MORE = MONEY, find the values of all the alphabets if each alphabet represents a single digit from 0 to 9. **(10)**

OR

What do you mean by Adversarial search? Explain Alpha-Beta pruning? **(10)**

P.T.O.

Q.4 Consider following axioms: (10)
1. Whoever can read is literate.
2. Dolphins are not literate.
3. Some dolphins are intelligent.
Prove "Some who are intelligent can't read" using resolution technique.

OR

Find the colour of a pet named Filch, given that he eats flies and croaks. The following four rules are there in rule base: (10)
R1: If Y eats flies and Y croaks => Then Y is a frog
R2: If Y sings and Y chirps => Then Y is a canary
R3: If Y is a canary => Then Y is yellow
R4: If Y is a frog => Then Y is green
Find solution using both forward chaining as well as backward chaining.

Q.5 With "wearing shoe" problem, explain partial order planning in detail. (10)

OR

What are disadvantages of Bayesian theory? Explain Dempster-Shafer theory. (10)

Q.6 What do you mean by Learning by Induction? Explain in detail. (10)

OR

What do you mean by expert systems? Explain rule-based systems architecture with neat diagram. (10)

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