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CSE401 Enrol. No. A2345220130

[ET]

END SEMESTER EXAMINATION : APRIL-MAY, 2023

ARTIFICIAL INTELLIGENCE

Time : 3 Hrs. *Maximum Marks : 60*

Note: ***Attempt questions from all sections as directed.***

SECTION – A (24 Marks)

Attempt any **four** *questions out of* **five.**

Each question carries **06** *marks.*

1. Before we can solve a problem using state space search, we must define an appropriate state space. Find a good state space representation of Missionaries and Cannibals problem.

2. Describe different types of knowledge required to build an Expert System.

3. How forward Kinematics determine the position and orientation of the end effector? Explain with example.

P.T.O.

4. Give two applications area of robotics. How a robot get various sensory information? Discuss Image understanding process in robotics.

5. Explain the concept of Frames. Create a frame of the person Ram who is a doctor. He is of 40. His wife name is Sita. They have two children Babu and Gita. They live in 100 kps street in the city of Delhi in India. The zip code is 756005.

SECTION – B (20 Marks)

Attempt any **two** *questions out of* **three.**

Each question carries **10** *marks.*

6. Generate a parse tree for the sentence "John went for a walk to the park with a golden statue." by using the following rules

S -> NP VP

VP -> VI | VI NP | VP PP

NP -> NP PP | DT NN | DT N

NP -> 'John' VI → 'went'

IN -> 'for' | 'to' | 'with'

DT -> 'a' | 'the'

NN -> 'walk' | 'park'

N -> 'statue'

JJ -> 'golden'

N->JJN

PP-> IN NP

(i) Using top-down parsing

(ii) Using bottom-up parsing

7. (a) Solve the following Crypt Arithmetic problem

BANANA + GUAVA = ORANGE (4)

(b) Give conceptual dependency representation for:

(a) Sita cuts an apple with a knife.

(b) The rose was given by rupa to anand.

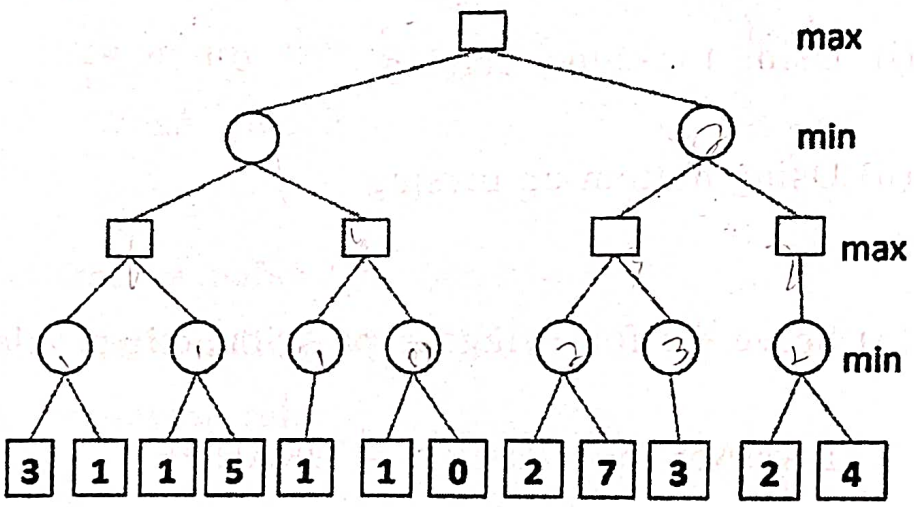
(c) Sanjay drove the car fast. (6)

8. Why transition network is important for NLP? Differentiate Transition Network, Recursive Transition Network and Augmented Transition Network (ATN) by taking suitable example(s).

SECTION – C (16 Marks)

(Compulsory)

9. (a) Find the pruning nodes using the Alpha-Beta pruning algorithm for the below gaming tree



(8)

(b) What is the significance of Expert-system approach to problem solving in the history of AI? How does it differ from for example, mean-ends analysis? How does it compare with AI approaches focusing on general mechanisms of intelligence? (8)