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CSE401

Enrol. No.

[ET]

END SEMESTER EXAMINATION : APRIL – MAY, 2018

ARTIFICIAL INTELLIGENCE

Time : 3 Hrs.

Maximum Marks : 70

Note: Attempt questions from all sections as directed.

Use of scientific calculator is allowed.

SECTION – A (30 Marks)

Attempt any five questions out of six.

Each question carries 06 marks.

1. How problem characteristics help in the selection of AI technique? Explain these characteristics with possible examples.
2. Explain Architecture of an Expert system. Give its three application areas.
3. Explain the different components of industrial robotics. How it is different from the conventional robotics?

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4. Describe different type of knowledge required to build an expert system.

5. How forward kinematics determines the position and orientation of the end effector?

6. Explain how prolog programming language is a good language for robot programming.

SECTION – B (20 Marks)

Attempt any two questions out of three.

Each question carries 10 marks.

7. Explain the Resolution algorithm used for reasoning under predicate logic with an example.

8. Write a script for a customer going to the bank to withdraw some money from his saving account. Considering following as component of the script :

Pros: Money, Counter, form, token

Roles: P=customer, E-Employee, C=Cashier

Entry condition : 1) P has more or less money

2) Bank is open

Result : P has more money.

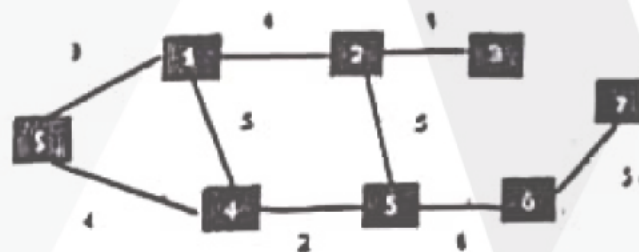
9. What is the significance of the expert-system approach to problem solving in the history of AI? How did it differ from, for example, means-ends analysis? How does it compare with AI approaches focusing on general mechanisms of intelligence?

SECTION - C
(Compulsory)

(20 Marks)

10. (a) Consider the graph given in figure 1 below. Assume that the initial state is S and the goal state is 7. Find a path from the initial state to the goal state using BEST FIRST search. Also report the solution cost. The straight line distance heuristic estimates for the nodes are as follows :

$$h(1) = 13, h(2) = 10, h(3) = 7, h(4) = 12, h(5) = 10, h(6) = 10, h(7) = 15 \quad (10)$$



- (b) There is a monkey at the door in a room. In the middle of the room a bunch of banana is hanging

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from the ceiling. The monkey is hungry and wants to get the banana, but he cannot stretch high enough from the floor. At the window of the room there is a box . Represent the information used in the above mentioned problem in predicate logic. (10)