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Name : ....

Reg. No: ....

FIRST SEMESTER M.TECH DEGREE EXAMINATION, JANUARY 2014

MCL/MCS 10 105 (A) – COMPUTATIONAL INTELLIGENCE

Time : Three Hours   Maximum : 100 Marks

*Answer any **FIVE** of the following by choosing at least one question from each module. All question carry equal marks.*

MODULE 1

1. (a) With a neat illustration explain the working of A* algorithm.   (12)
    (b) State the significance of AO* algorithm.   (8)
2. (a) Explain the mini-max algorithm by an illustration scenario.   (8)
    (b) Discuss in detail alpha-beta search algorithm and its real-time applications. (12)

MODULE 2

3. (a) At what level should knowledge be represented? Is there a good set of primitives into which all knowledge can be broken down?   (10)
    (b) Draw the functional block diagram of a rule based system and explain.   (10)
4. (a) Define Certainty factor. What are the components?   (10)
    (b) Explain Bayesian method of reasoning with examples.   (10)

MODULE 3

5. (a) Consider the following set of examples, each with six inputs and one target output: Run the perceptron learning rule on these data and show the final weights (10)

I_1	1	1	1	1	1	1	1	0	0	0	0	0	0	0
I_2	0	0	0	1	1	0	0	1	1	0	1	0	1	1
I_3	1	1	1	0	1	0	0	1	1	0	0	0	1	1
I_4	0	1	0	0	1	0	0	1	0	1	1	1	0	1
I_5	0	0	1	1	0	1	1	0	1	1	0	0	1	0
I_6	0	0	0	1	0	0	1	0	1	1	0	1	1	0
T	1	1	1	1	1	1	0	1	0	0	0	0	0	0

    (b) Write notes on Genetic Algorithms   (10)
6. (a) Discuss Reinforcement learning with emphasis on active and passive reinforcement.   (10)
    (b) Explain decision tree learning with a suitable example.   (10)

MODULE 4

7. (a) Explain the syntax and semantics of First-order logic   (6)
    (b) Represent the following sentences in predicate logic by defining your own vocabulary.   (14)
        A. Only one student took Greek in Spring 2001
        B. Every regular student who takes French passes it
        C. Some students are regularly irregular
        D. You can fool some of the people all of the time.
        E. Spot has a sister who is a cat
        F. All cats are mammals
        G. Everybody loves somebody
8. Examine the AI literature to discover whether the following tasks can currently be solved by computers. If you happen to arrive at any convincing answer, express the following relating to AI literature Buying a week's worth of groceries in the market.

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