TCS-603

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Even Semester Examination 2017-18

B.Tech. (SEMESTER-VI)

ARTIFICIAL INTELLIGENCE

Time: 03:00 Hours

Max Marks : 100

Note: (i) Attempt ALL question. All Question carry equal marks.

1. Attempt **any four** parts of following: (5x4=20)

    (a) What is AI? Explain any five applications area of AI in short.

    (b) Explain the method of Hill climbing. Also explain the problems associated with hill climbing and possible solutions.

    (c) Explain A* Algorithm by an example.

    (d) Discuss AO* algorithm. Give one example where AO* is suitable to apply.

    (e) Define "Heuristic Search". Explain the steps in "Best First Search" and illustrate it using a suitable example.

    (f) Solve following cryptarithmetic problem with appropriate strategy/steps:

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    + THAT
    APPLE

2. Attempt **any four** parts of following: (5x4=20)

    (a) What are the limitations of Propositional Logic? Explain how they can be overcome using Predicate logic.

    (b) Explain knowledge based agent with example.

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(c) Explain unification in predicate logic. Also discuss the steps of converting predicate logic wffs to clause form.

(d) Explain Semantic Net & Frame with suitable example.

(e) Explain Strong slot filler with example?

(f) Consider the following sentences:

    (i) Tennis is a game. Chess is a game.

    (ii) John and Steve are students.

    (iii) John plays Tennis.

    (iv) Steve plays everything that John plays.

    (v) Students who play Tennis, do not play Chess.

Translate the above sentences into formulas in Predicate logic and Prove using resolution that "Steve does not play Chess".

3   Attempt **any two** parts of following: (10x2=20)

(a) What is non-monotonic reasoning? How AI handles reasoning under uncertainty? Explain with example.

(b) State the Baye's theorem. Explain Bayesian Network in detail.

(c) Write short notes on

    (i) Dempster Shafer Theory

    (ii) Fuzzy Logic

4   Attempt **any two** parts of following: (10x2=20)

(a) Explain the concept of planning with state space search with an example. Explain conditional planning.

(b) Explain learning decision trees with an example.

(c) Write short notes on :

    (i)   Neural Net learning

    (ii)   Genetic learning

5. Attempt **any two** parts of following: (10x2=20)

    (a) Write short notes on

        (i)   Alpha – beta pruning

        (ii)   Knowledge acquisition stages

    (b) What is the swarm intelligent system? Explain the application and working of Ant Colony System.

    (c) Define expert system. Also explain MYCIN expert system.

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