Roll No. ☐☐☐☐☐☐☐☐☐☐☐ Total No. of Pages: 02

Total No. of Questions: 09

MCA (2015 Batch) (Sem. – 5)
ARTIFICIAL INTELLIGENCE
M Code: 74381
Subject Code: MCA-501
Paper ID: [74381]

Time: 3 Hrs. Max. Marks: 60

INSTRUCTIONS TO CANDIDATES:
1. SECTIONS-A, B, C & D contains TWO questions each carrying TEN marks each and students have to attempt any ONE question from each SECTION.
2. SECTION-E is COMPULSORY consisting of TEN questions carrying TWENTY marks in all.
3. Use of non-programmable scientific calculator is allowed.

SECTION A

1. a) What is Artificial Intelligence? Discuss its importance. (5)

   b) Explain the Water Jug problem. How to define this problem as a state space search? (5)

2. a) What is Turing Test and its underlying assumption? Explain. (5)

   b) Explain the Production System and its characteristics. (5)

SECTION B

3. Explain the Blind Search Techniques and their Algorithms with suitable examples. (10)

4. Write notes on:

   a) Advantages and disadvantages of informed search techniques. (5)

   b) Perfect and imperfect decision game. (5)

SECTION C

5. a) Differentiate between forward and backward chaining with suitable examples. (5)

   b) Explain Clausal Form Representation with example. (5)

6. Write the Syntax in First Order Predicate Logic (FOPL) for the following statements:

    a) Alex is Tom's Sister. (1)

    b) Tom has a sister who lives in Australia (2.5)

    c) Tom has no brother. (2.5)

    d) If n is a natural number, then n+1 is also a natural number. (1.5)

    e) No student loves Bill. (2.5)

SECTION D

7. a) Differentiate between Weak slot and Strong slot-filler structures frames with example. (5)

    b) Describe the use of Utility theory and functions. (5)

8. What is natural language processing? Discuss various levels of knowledge used in understanding of Natural language? What are the problems related to it? (10)

SECTION E

9. Give short answers of the following:

    a) What is Uncertainty with respect to expert systems?

    b) What are the related fields to AI?

    c) Explain the purpose of A* algorithm.

    d) Illustrate the difference between Predicate Logic and First Order Predicate Logic with example.

    e) What is the purpose of Inference Rule?

    f) Discuss alpha-beta pruning.

    g) Explain Bayes Rule.

    h) Describe evaluation function.

    i) Illustrate the difference between Fuzzy Set and Crisp Set with example.

    j) Describe various Knowledge Representation Issues.