Total No. of printed pages = 3

MCA 182502

Roll No. of candidate

11/3 2021

MCA 5th Semester (Final) End-Term Examination

ARTIFICIAL INTELLIGENCE

(New Regulation & New Syllabus)

(w.e.f. 2018 – 19)

Full Marks – 70   Time – Three hours

The figures in the margin indicate full marks for the questions.

Answer question No. 1 and any *four* from the rest.

1. Choice the appropriate answer: $(10 \times 1 = 10)$

    (i) A search algorithm takes ——————— as an input and returns ——————— as an output.

        (a) Input, output

        (b) Problem, solution

        (c) Solution, problem

        (d) Parameters, sequence of actions

    (ii) What is the goal of artificial intelligence?

        (a) To solve real-world problems

        (b) To solve artificial problems

        (c) To explain various sorts of intelligence

        (d) To extract scientific

    (iii) A * algorithm is based on ———————

        (a) Breadth-First-Search

        (b) Depth-First -Search

        (c) Best-First-Search

        (d) Hill climbing

[Turn over

(iv) General games involve ———————

    (a)   Single-agent

    (b)   Multi-agent

    (c)   Neither Single-agent nor Multi-agent

    (d)   Only Single-agent and Multi-agent

(v) Which algorithm will work backward from the goal to solve a problem?

    (a)   Forward chaining

    (b)   Backward chaining

    (c)   Hill-climb algorithm

    (d)   None of the mentioned

(vi) What are the main components of the expert systems?

    (a)   Inference Engine

    (b)   Knowledge Base

    (c)   Inference Engine and Knowledge Base

    (d)   None of the mentioned.

(vii) GERMWATCHER is used to control infections caused by bacteria.

    (a)   True

    (b)   False

(viii) What is the form of Fuzzy logic?

    (a)   Two-valued logic

    (b)   Crisp set logic

    (c)   Many-valued logic

    (d)   Binary set logic

(ix) What is the name for information sent from robot sensors to robot controllers?

    (a)   temperature

    (b)   pressure

    (c)   feedback

    (d)   signal

(x) In LISP, the square root of X is referenced as ———————

    (a)   sqrt(x)

    (b)   (sqrt x)

    (c)   x/2

    (d)   x/3

2. (a) What do you mean A.I System? What are the importance of A.I? (4)

(b) Prove that X=((P=>Q) ∧ (Q=>R)) =>(P=>R) is a Tautology (4)

(c) Prove that (P=>Q) ∧ (R=>Q) =(P ∨ R) =>Q. (4)

(d) What are the properties of knowledge representation system? (3)

3. (a) Briefly describe the function of generate and test method? (5)

(b) What do you mean AND-OR graph? Describe the AO* algorithm? (6)

(c) How many ways to perform a search? (4)

4. (a) What do you mean Isa and instance relationship? (4)

(b) Briefly describe forward and backward chaining? What do you mean Fuzzy logic? (7)

(c) What do you mean Resolution and Refutation? (4)

5. (a) What is Expert System? Describe the components of Expert system? What are the advantages and disadvantaged of Expert System? Full Signature of the Paper Setter Full Signature of Moderator. (9)

(b) What is machine learning? (4)

(c) What do you mean Meta Knowledge? (2)

6. (a) What is heuristic search? Briefly describe Mini-max heuristic search algorithm? (6)

(b) Briefly describe Biological Neural Network and Artificial Neural Network? (5)

(c) What is learning and planning? (4)

7. Write short notes on any *three* from the followings: (3 × 5 = 15)

(a) MYCIN

(b) Frames and Scripts

(c) Robotics

(d) Hill Climbing

(e) LISP.