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Roll No.

PAPER ID—14903

M.C.A. EXAMINATION, 2023

(First Semester)

ARTIFICIAL INTELLIGENCE

Code : MCA-105

Time : 3 Hours

Maximum Marks : 80

Before answering the question-paper candidates should ensure that they have been supplied to correct and complete question-paper. No complaint, in this regard, will be entertained after the examination.

Note : Attempt Five questions in all, selecting one question from each Unit. Q. No. 1 is compulsory. All questions carry equal marks.

Compulsory Question

1. (i) What is Turing Test in AI ? Explain.

(T-D13-28/3) T-14903

P.T.O.

- (ii) How is Knowledge represented in form of Ontologies ?
(iii) Define fail predicates in Prolog.
(iv) What is Knowledge ?
(v) What is admissibility of Heuristic function ?
(vi) Define Semantic Nets.
(vii) What is Reinforcement Learning ? Give example.
(viii) Name the file operations used in PROLOG.

2×8=16

Unit I

2. (a) Compare heuristic search with blind search. Also state the conditions in which blind search performs better than heuristic search.
(b) Explain Best First search and A* Algorithms in detail with the help of examples.

8×2=16

T-14903

2

3. (a) How to define a problem using state space search ? Illustrate with the help of example.
(b) Explain the following with the help of example :
(i) Problem Reduction
(ii) Problem Characteristics ?

8×2=16

Unit II

4. (a) Explain the architecture of Expert System.
(b) Explain the following with respect to Expert System Development Life Cycle :
(i) Problem Selection
(ii) Prototype Construction
(iii) Formalization
(iv) Evaluation.

8×2=16

(T-D13-28/4) T-14903

3

P.T.O.

5. Write short notes on the following techniques in Knowledge representation :
(i) Formal Logic
(ii) Semantic Nets
(iii) Frames
(iv) Scripts.

16

Unit III

6. (a) What is the difference between biological and artificial Neural Networks ?
(b) What is the role of Self Organization Maps and Hopfield networks in ANN ?
7. Contrast the difference between Fuzzy Logic and Boolean Logic. What is Fuzzy Expert System ? Also explain inference process for fuzzy expert system.

8×2=16

16

T-14903

4

Unit IV

8. (i) How can recursion be implemented in a PROLOG ?
- (ii) What are string operations ? How can strings be implemented in PROLOG ? **8×2=16**
9. Explain the following with PROLOG code segments : **4×4=16**
- (i) Arithmetic Operations
 - (ii) Input Predicates
 - (iii) Output Predicates
 - (iv) Cut Predicate