2012

Time: 3 hours

Full Marks: 80

Candidates are required to give their answers in their own words as far as practicable.

The figures in the margin indicate full marks.

Answer from both the Groups as directed.

Group – A

(Objective Type Questions)

Answer all questions:

1. Choose the correct answer of the following:
   \[2 \times 10 = 20\]
   (a) _______ is a system that use production rule to represent its knowledge.
      (i) EBL
      (ii) Analogy
      (iii) SOAR
      (iv) Rote

CX – 16/3 (Turn over)
(b) Prolog equivalent capture an important property of semantic nets, that they may be used for a form of inference known as ________

(i) Value
(ii) Polymorphism
(iii) Inheritance
(iv) None of these

(c) ________ networks are an alternative to predicate logic as a form of knowledge representation.

(i) Frame
(ii) Prolog
(iii) Semantic
(iv) None of the above

(d) Knowledge is represented in rule form is called ________ based system in Expert System.

(i) Prolog
(ii) Rule
(iii) Schema
(iv) Knowledge

(e) The depth first search is preferred over the breath first search when the search tree is known to have a ________ number of goal.
(i) Cutoff
(ii) Deep
(iii) Plentiful
(iv) Complex

(f) ________ is the best suited to problems where the heuristic gradually improves the closer it gets to the solution.
(i) Strategy
(ii) Hill climbing
(iii) Drawback
(iv) None of the above

(g) A syntax or sentence holds various ________ where each symbol holds a proposition that can either be true or false.
(i) Propositional Symbols
(ii) Adequacy Symbols

b CX - 16/3  (3) (Turn over)
(iii) Representational Symbols
(iv) None of these

(h) ________ refers to transfer of physical location-some objects moved from place to place, as in go or a move.

(i) PTRANS
(ii) Knowledge
(iii) Expert System
(iv) None of the above

(i) ________ computers programs deal with large amounts data that are structured in simple and uniform ways.

(i) Modern
(ii) Factual
(iii) Traditional
(iv) None of these

(i) ________ is structured that prescribes a set of circumstances, which could be expected to follows on follows one another.

(i) Script
(ii) Expert System

CX-16/3 (4) Contd.
(iii) Knowledge

(iv) None of the above

**Group – B**

**(Long-answer Type Questions)**

Answer any four questions: \[15 \times 4 = 60\]

2. (a) What do you mean by Artificial Intelligence? Mention some of the characteristics of Intelligence.

(b) In Artificial Intelligence what do you mean by Agent? What is the role of agents in Artificial Intelligence?


(b) Discuss the advantages and disadvantages of Rule based system.

4. What is Heuristic? Discuss the functions. How is it useful for combinational problems? Explain with suitable example.

CX – 16/3 (5) (Turn over)
5. Distinguish between the following:
   (a) Depth-First search and Breath-First search.
   (b) Semantic network and Frame based representation.


7. (a) Derive DNF for the expression given as follows:
   \( \neg (P \rightarrow (\neg Q \land R)) \)
   (b) Derive CNF for the expression given as follows:
   \( (\neg P \land Q) \lor (P \land \neg Q) \)

8. Write the structured of an Expert System?
   Discuss Knowledge base, Fact, Rule, Interpreter and Scheduler.

9. Illustrate, how to define a problem as a state space search with a suitable example.
10. Write short notes on any two of the following:
(a) Forward Chaining and Backward Chaining
(b) Declarative and Procedural Knowledge
(c) Modus Tollens and Modus Ponens
(d) Uniqueness Quantifier and Uniqueness Operator