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BCA(III)/21A/14

2014

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)

1. Choose the correct alternative for any ten of the following : 2x10 = 20

(a) _____ networks are an alternative to the predicate logic as a form of knowledge representation :

(i) Frames

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(Turn over)

(ii) Prolog

(iii) Semantic

(iv) Conceptual dependency

(b) _____ is the best suited to the problems where the heuristic gradually improves the closer it gets to the solution.

(i) Strategy

(ii) Hill Climbing

(iii) Drawback

(iv) Simulated Annealing

(c) _____ refers to transfer of physical location (some object moves from one place to another).

(i) MTRANS

(ii) PTRANS

(iii) MBUILD

(iv) All of the above

(d) Time Complexity of Breadth First Search is :

(i) $O(b^d)$

(ii) $O(e^d)$

(iii) $O(e^b)$

(iv) $O(d^b)$

(e) According to Modus Ponens Rule from P and $P \rightarrow Q$ we can infer :

(i) P

(ii) Q

(iii) $\sim P$

(iv) $\sim Q$

(f) The inference engine in an expert system interprets :

(i) Database with the help of knowledge base

(ii) Knowledge-base using database

(iii) Database using working memory

(iv) Database using a graphical user interface

(g) MYCIN is related to :

(i) Intelligent System

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(2)

Contd.

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(3)

(Turn over)

(ii) Database

(iii) Expert System

(iv) Medicine

(h) Which is not heuristic search ?

(i) Constraint satisfaction search

(ii) Depth first search

(iii) Simulated annealing

(iv) Hill climbing

(i) Which is not a pure AI game ?

(i) Ludo

(ii) Snakes and Ladders

(iii) Tic-tac-toe

(iv) Chess

(j) If in a problem the number of initial states is much more than the number of final states, we should be :

(i) Forward Reasoning

(ii) Backward Reasoning

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(4)

Contd.

(iii) Both Forward and Backward

(iv) None of these

Group - B

(Long-answer Type Questions)

Answer any four questions :

2. What do you mean by Artificial Intelligence ?

Mention some of the characteristics of Intelligence. Discuss any four-application areas of Artificial Intelligence. 15

3. What is Expert System ? Discuss knowledge base and inference engine. Define expert system. Explain the characteristic feature of expert systems. 15

4. With a diagram, explain the architecture of a rule based expert system. Discuss the advantage and disadvantage of rule-based system. 15

5. Consider the following sentences : 15

(a) John like all kind of food.

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(5)

(Turn over)

- (b) Apples are food.
- (c) Chicken is food.
- (d) Anything anyone eats and is not killed by is food.
- (e) Bills eats peanuts and is still alive.
- (f) Sue eats everything bill eats.

Translate the sentence into predicate logic and prolog statement.

- 6. Distinguish between the following : 15
 - (a) Depth First Search and Breadth First Search
 - (b) Semantic Network and Frame Based System

- 7. What is Heuristic Information ? Explain with example. State the A* algorithm for graph searching. 15

- 8. What is an Agent ? Describe the structure of an agent. What is the role of agent in artificial intelligence ? 15

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Contd.

- 9. Write algorithm for Propositional resolution and unification algorithm. Explain, in detail, non-monotonic reasoning with an example. 15

- 10. Write short notes on any three of the following : 5x3 = 15

- (a) Prolog
- (b) Dampster Shafer Theory
- (c) Conceptual Dependency
- (d) Natural Language Processing
- (e) Expert System Shell

