Total number of printed pages–4

4 SEM BCA (CBCS) IAI 1

2019

(June)

COMPUTER APPLICATION

Paper : 4·1

(Introduction to AI)

Full Marks : 60

Time : Three hours

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

1. Answer the following : 1×5=5

   (a) What is Expert System ?

   (b) Define Heuristic function.

   (c) What is Plateau in hill-climbing method ?

   (d) Define the term fact.

Contd.

(e) Which among the following usually requires less memory?

(i) BFS

(ii) DFS

(iii) Undecidable

(iv) None of the above.

(Choose the correct option)

2. Answer the following : 2×5=10

(a) Mention the differences between forward chaining and backward chaining method.

(b) Write about *any two* applications of AI.

(c) Define Modus Ponens with example.

(d) What are the limitations of propositional logic?

(e) What is clausal form? Convert "All dogs are animal" to clausal form.

3. (a) Differentiate between weak AI and strong AI. 2

(b) Describe the state space for "Water Jug Problem". Solve this problem by giving its operation sequence. 8

OR

How to define a problem as state space? Explain with the help of an example. 8

4. (a) Write the algorithm for Generate and Test. 3

(b) Explain Steepest Ascent Hill Climbing method with example. Write the difference between Steepest Ascent Hill Climbing and Simple Hill Climbing. 7+2=9

OR

Explain Iterative Deepening Search method with a suitable example. What are the advantages of this method over Breadth-First Search method. 7+2=9

5. (a) Prove that "A is happy" from the following statements using resolution : 5

(i) All Philosophers are Greek.

(ii) All Greeks are happy.

(iii) Either A or B is a Philosopher

(iv) B is not a Philosopher.

(b) Convert the following into First-order logic : 5

(i) All indoor games are easy.

(ii) Rajiv likes cricket.

(ii) Any person who is respected by every person is a king.

(iv) Alka likes all kinds of food.

(v) Anything anyone eats is called food.

(c) Explain Instance and Is-A relationship with example. 3

OR

What are the different quantifiers used in First-order Logic? Give example. 3

6. (a) Determine whether the following statement is a tautology or contradictory. 3

$$((A \rightarrow \neg B) \wedge (\neg C \rightarrow A)) \wedge B) \rightarrow C$$

(b) Define knowledge. Explain different issues in knowledge representation. 1+6=7

OR

What is Constraint satisfaction problem? Explain with example. 7