MAY-24-0471

CS-504 (Artificial Intelligence & Expert System (CSE, IT))

B.Tech-5th (CBCS)

Time : 3 Hours   Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note: Attempt five questions in all, selecting one question each from section A, B, C and D. Q. No.9 is compulsory.

SECTION-A

1. (a) Define intelligent agents and their types?

    (b) What is mean-end analysis? Discuss with an example.
    (10)

2. (a) What are production systems and their components?

    (b) Compare minmax and alpha-beta pruning taking an example.   (10)

SECTION-B

3. Explain backward reasoning. Prove that the following sentence is inconsistent: 1. Ram loves Sita and Geeta is not happy but her parents are happy. 2. If Ram marries Sita then Harsh and her friend Geeta will be happy. 3. Ram will marry Sita if Sita loves Ram.   (10)

4. What is meant by structured knowledge representation? Prove that the following sentence is valid: "If I work whole night on this problem then I can solve it. If I solve the problem, then I will understand the topic. Therefore, I will work whole night on this problem then I will understand the topic".   (10)

SECTION-C

5. Describe Boltzman machine in detail. Also, define Hopfield network.   (10)

6. Genetic algorithms maintain several possible solutions, whereas simulated annealing works with one solution. Is the statement correct? Justify your answer.   (10)

SECTION-D

7. In the context of Expert Systems, describe what the term "knowledge acquisition" covers. Also, outline how Expert Systems can be distinguished from more conventional computer systems.   (10)

8. Suppose you have a neural network that is overfitting to the training data. Describe the ways to fix this situation.   (10)

SECTION-E (Compulsory)

9. Answer following questions in brief: (10×2=20)

    i.   What is Information in AI?

    ii.   Discuss Depth First Search.

    iii.   What are qualifiers?

    iv.   What is use of cut in PROLOG?

    v.   What is back-propagation algorithm?

    vi.   What are the operators of genetic algorithm?

    vii.   What is checker in game playing?

    viii. What is meant by Semantic analysis?

    ix.   What is backward chaining in Expert System?

    x.   What is language parsing?