CBCS SCHEME

USN | | | | | | | | | | 17CS562

Fifth Semester B.E. Degree Examination, June/July 2023
Artificial Intelligence

Time: 3 hrs.   Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. What is Artificial Intelligence? List the tasks performed by AI. **(06 Marks)**
   b. Write an algorithm for Breadth – First – Search and also list the advantages of it. **(06 Marks)**
   c. Write the A* algorithm. **(08 Marks)**

OR

2 a. What is production system? List and explain the contents of production system. **(06 Marks)**
   b. Define Heuristic search. List the key dimensions of problem search. **(06 Marks)**
   c. Write the production rules for the Water Jug problem. **(08 Marks)**

Module-2

3 a. What is knowledge representation? List and explain the different approaches of knowledge representor. **(06 Marks)**
   b. What is predicate logic? Consider the following sentences:
      I) John likes all kinds of food.
      II) Apples are food.
      III) Chicken is food.
      IV) Anything anyone eats and isn't killed by food.
      V) Bill eats peanuts and is still alive.
      VI) Sue eats everything Bill eats.
      (i) Translate these sentences into formulas in predicate logic.
      (ii) Prove that John likes peanuts using backward chaining.
      (iii) Convert the formulas of part (i) into clause form.
      (iv) Prove that John likes peanuts using resolutions.
      (v) Use resolutions to answer the question, "What food does sue eat?". **(06 Marks)**
   c. What is logic programming? Briefly explain programming in logic and PROLOG with an example. **(08 Marks)**

OR

4 a. List and explain the issues encountered in Knowledge Representation. **(06 Marks)**
   b. Define and write unification algorithm. **(06 Marks)**
   c. Write short notes on Backward-chaining, Forward-chaining rule systems. **(08 Marks)**

Module-3

5 a. List and explain the different types of Nonmonotonic Reasoning in detail. **(06 Marks)**
   b. Discuss the Bayesian Networks in detail with an example. **(06 Marks)**
   c. Explain the four implementation issues that arises in nonmonotonic reasoning. **(08 Marks)**

OR

6 a. Explain the role of Dependency-Directed Backtracking in nonmonotonic reasoning. **(06 Marks)**
   b. Discuss the Dempster-Shafer theory. **(06 Marks)**
   c. What is Semantic Nets? Explain the Partitioned Semantic Nets with an example. **(08 Marks)**

Module-4

7 a. Define Script. List and explain the important components of a script. **(06 Marks)**
  b. Describe minimax search procedure and write the algorithm for it. **(06 Marks)**
  c. Implement the alpha-beta search procedure use it to play a simple gone such as tic-toc-toe. **(08 Marks)**

OR

8 a. What is conceptual dependency? Explain with an example **(06 Marks)**
  b. Explain DFIS algorithm in detail. **(06 Marks)**
  c. What is CYC? List and explain several distinctions of CYC. **(08 Marks)**

Module-5

9 a. What is Natural language processing? Explain steps involved in Natural language processing. **(06 Marks)**
  b. Define learning. List and explain different types of learning. **(06 Marks)**
  c. Explain candidate elimination algorithm with an example. **(08 Marks)**

OR

10 a. What is Analogy? Explain different methods of analogical problem solving used in AI. **(06 Marks)**
  b. Write a short notes on Expert Systems. **(06 Marks)**
  c. Define Semantic Analysis. Explain Local processing and sentence-level processing in detail. **(08 Marks)**

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