CBCS SCHEME

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21AI54

Fifth Semester B.E./B.Tech. Degree Examination, June/July 2025
Principles of 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. Summarize the history of Artificial Intelligence. **(10 Marks)**

b. Define Artificial Intelligence. Explain the two dimensions of defining Artificial Intelligence [Thought process and Reasoning]. **(10 Marks)**

OR

2 a. Explain briefly on the foundations of artificial intelligence. **(10 Marks)**

b. Explain the working of Goal-based agent and Utility-based agent with the help of a neat diagram. **(10 Marks)**

Module-2

3 a. Explain the working and properties of Depth-first search and Iterative deepening depth-first search strategies. **(10 Marks)**

b. Outline the steps performed by problem-solving agent and interpret the problem formulation with regard to the problem in vacuum world and 8 puzzle. **(10 Marks)**

OR

4 a. Summarize on the evaluation of a search strategy that is used in problem-solving. Also give a brief description on uninformed search strategy. **(10 Marks)**

b. Explain the problem formulation of 8-Queens problem with state transitions. **(10 Marks)**

Module-3

5 a. Explain the working and algorithm of Best-first search with a suitable example. **(10 Marks)**

b. Demonstrate the knowledge used in solving wumpus world problem with the help of PEAS description. **(10 Marks)**

OR

6 a. Explain the working and algorithm of A^* search with a suitable example. **(10 Marks)**

b. Explain the syntax and semantics of propositional logic along with reasoning patterns in propositional logic. **(10 Marks)**

Module-4

7 a. Explain the syntax and semantics of first order logic with an example. **(10 Marks)**

b. Extend the use of first order logic by giving suitable examples related to the kinship domain and the wumpus world. **(10 Marks)**

OR

8 a. Outline the working of forward chaining in first order logic by using some examples. **(10 Marks)**

b. Summarize the concept of resolution used in first order logic. **(10 Marks)**

Module-5

9 a. Interpret on the Basic Probability notations used in representing a formal logic. **(10 Marks)**

b. Infer about using full joint distributions based on the probabilistic inference, with the help of examples. **(10 Marks)**

OR

10 a. Explain Baye's rule and its use with the help of suitable examples. **(10 Marks)**

b. Explain the techniques that can be adopted to solve probabilistic reasoning problems in the wumpus world. **(10 Marks)**

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