

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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

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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