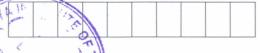
# CBCS SCHEME



ime 3 hrs

21AI54

Fifth Semester B.E./B.Tech. Degree Examination, June/July 2025

Principles of Artificial Intelligence

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].

### 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

- 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)

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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