CBCS SCHEME

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21AI54

Fifth Semester B.E./B.Tech. Degree Examination, June/July 2026
Principles of Artificial Intelligence

Time: 3 hrs. Max. Marks: 100

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

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.

Module-1

1 a. What is Artificial Intelligence? Explain the four different approaches of artificial intelligence. **(10 Marks)**

b. List and explain the foundations of Artificial Intelligence. **(10 Marks)**

OR

2 a. Explain the concept of interaction between agents and environment with the help of a neat diagram. Illustrate the concept with an appropriate example. **(10 Marks)**

b. With the help of neat schematic diagram, explain the following :

i) Simple reflex agents
ii) Goat – based agents. **(10 Marks)**

Module-2

3 a. What are Problem Solving Agents? Explain the four – phase problem solving process. **(10 Marks)**

b. Describe the vaccum – world problem with state space graph. **(10 Marks)**

OR

4 a. Explain different real – world problems in Artificial Intelligence. **(10 Marks)**

b. Write about the following uniformed search strategies :

i) Breadth – first search
ii) Depth – first search. **(10 Marks)**

Module-3

5 a. Define :
i) Goal formulation
ii) Problem formulation
iii) Tree expansion
iv) Graph search. **(10 Marks)**

b. Explain the following Uniformed search strategies :

i) Iterative Peepening
ii) Uniform cost search. **(10 Marks)**

OR

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6 a. Explain Knowledge based Agents. Write the algorithm for knowledge based agent. **(10 Marks)**

b. Explain Wumpus World Problem with necessary diagrams. **(10 Marks)**

Module-4

7 a. Discuss the syntax and semantics of first order logic. **(10 Marks)**

b. Explain Universal and Existential Quantifiers. **(10 Marks)**

OR

8 a. What is Propositional logic? How knowledge is represented by proportional logic? **(10 Marks)**

b. Explain Forward – Chaining with an example. **(10 Marks)**

Module-5

9 a. What is Uncertain Knowledge? How Knowledge is acting under uncertainty? **(10 Marks)**

b. Explain Axioms of probability. **(10 Marks)**

OR

10 a. Illustrate with an example, Baye's Rule and its use. **(10 Marks)**

b. Explain full joint distributions in probability. **(10 Marks)**

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