Reg. No…….. Name…….. **26P231**

M. Sc. DEGREE END SEMESTER EXAMINATION - APRIL 2026

SEMESTER 2: COMPUTER SCIENCE (ARTIFICIAL INTELLIGENCE)

COURSE: 24P2CAIT07 : AI AND KNOWLEDGE REPRESENTATION

(For Regular 2025 Admission and Improvement/Supplementary 2024 Admission)

Time: Three hours Max. Weight: 30

PART A

Answer any 8 questions

Weight : 1

1. Define an intelligent agent with an example. (U, CO1)
2. Define Constraint Satisfaction Problem (CSP) (U, CO2)
3. List two differences between uninformed and informed search strategies. (U,CO2)
4. List two graph databases used in knowledge representation. (U,CO5)
5. Define Heuristic function in AI search? (U,CO2)
6. Why is multi-agent planning more complex than single-agent planning? (A,CO4)
7. How is probabilistic reasoning applied in AI systems? (A,CO3)
8. Describe the role of Web 3.0 in knowledge representation. (U,CO5)
9. Explain the PEAS framework with an example of an intelligent agent. (U,CO1)
10. Explain the role of AI in modern technology. (U,CO1)

(1 x 8 = 8)

PART B

Answer any 6 questions

Weights : 2

11. Explain the nature of AI environments with an example. (U,CO1)
12. Differentiate between blind search and heuristic search strategies. (U,CO2)
13. Consider a chess-playing agent.
    Explain how adversarial search is used in game-playing. (A, CO3, CO4)
14. Explain the significance of First-Order Logic in knowledge representation with an example. (A, CO3, CO4)
15. Explain the different types of AI environments with suitable examples. (U, CO1)
16. List and define any two uninformed search techniques. (U, CO2)
17. Explain the working of A * search algorithm with an example.
    How does it ensure finding the optimal path? (U, CO2)
18. Explain the working of the Greedy Best-First Search algorithm with an example.
    Show how it selects nodes step by step in a given search space? (A, CO2)

(6 x 2 = 12)

PART C

Answer any 2 questions

Weights : 5

19. Explain Ontology. Apply the key concepts and role of Ontology in Knowledge representation. AI-powered university Chatbots recommend courses based on student interests. (A, CO5,CO6)

20. Explain the types of AI systems with suitable examples. (U, CO1)
21. Explain in detail about Heuristic Search Techniques in Problem Solving in AI with suitable examples. (A, CO2)
22. Describe the role of AI in automated planning and decision-making. Explain different planning approaches, including hierarchical planning, conditional planning, and real-world execution strategies. Support your answer with suitable examples from robotics, business intelligence, or autonomous systems. (A, CO4)

(5 x 2 = 10)

OBE: Questions to Course Outcome Mapping

CO	Course Outcome Description	CL	Questions	Total Wt.
CO 1	Demonstrate fundamental understanding of the history of artificial intelligence (AI) and its foundations.	U	1,9,10,11,15,20	12
CO 2	Apply basic principles of AI in solutions that require problem solving, inference, perception, knowledge representation, and learning.	A	2,3,5,12,16,17,18,21	16
CO 3	Demonstrate awareness and a fundamental understanding of various applications of AI techniques in intelligent agents, expert systems, artificial neural networks and other machine learning models.	U	7,13,14	5
CO 4	Demonstrate proficiency developing applications in an AI language. Expert system shell, or data mining tool.	A	6,13,14,22	10
CO5	Demonstrate proficiency in applying scientific method to models of machine learning	A	4,8,19	7