Code: 23ES1305

II B.Tech - I Semester – Regular Examinations - DECEMBER 2024

ARTIFICIAL INTELLIGENCE
(ARTIFICIAL INTELLIGENCE & MACHINE LEARNING)

Duration: 3 hours   Max. Marks: 70

Note: 1. This question paper contains two Parts A and B.
   2. Part-A contains 10 short answer questions. Each Question carries 2 Marks.
   3. Part-B contains 5 essay questions with an internal choice from each unit. Each Question carries 10 marks.
   4. All parts of Question paper must be answered in one place.

BL – Blooms Level   CO – Course Outcome

PART – A

		BL	CO
1.a)	What is meant by the concept of rationality in AI?	L1	CO1
1.b)	What is a learning agent?	L1	CO1
1.c)	What is a search problem in AI?	L1	CO1
1.d)	Define uniformed search strategies.	L1	CO1
1.e)	Define propositional logic.	L1	CO1
1.f)	Differentiate FOL with propositional logic?	L2	CO1
1.g)	What is state-space search?	L1	CO1
1.h)	What is a planning graph?	L1	CO1
1.i)	What is explanation-based learning?	L1	CO1
1.j)	Define the term "reward" in reinforcement learning.	L1	CO1

PART – B

			BL	CO	Max. Marks
		UNIT-I			
2	a)	Explain the applications of Artificial Intelligence?	L2	CO1	5 M
	b)	Explain properties of environment.	L2	CO1	5 M
		OR			
3	a)	Explain History of Artificial Intelligence?	L2	CO1	5 M
	b)	What is PEAS? Explain different agent types with their PEAS descriptions.	L2	CO1	5 M
		UNIT-II			
4	a)	Explain about A* algorithm in detail	L3	CO4	5 M
	b)	Describe simple hill climb algorithm with example.	L2	CO4	5 M
		OR			
5		Give a brief note on mini-max & Alpha-beta pruning with example and neat sketch?	L2	CO4	10 M
		UNIT-III			
6	a)	Explain the connection between $\forall$ and $\exists$	L2	CO2	5 M

	b)	Differentiate between forward chaining and backward chaining.	L2	CO2	5 M

<div align="center">OR</div>

7		Explain knowledge based agents and Discuss the components involved in showing intelligence?	L3	CO2	10 M

<div align="center">UNIT-IV</div>

8	a)	Describe in detail about planning?	L2	CO3	5 M
	b)	Explain the forward progression state-space search in planning.	L3	CO3	5 M

<div align="center">OR</div>

9	a)	What are the key characteristics that differentiate classical planning from other types of planning?	L2	CO3	5 M
	b)	Describe hierarchical planning advantages and provide an example of how it is used in a real-world application.	L2	CO3	5 M

<div align="center">UNIT-V</div>

10	a)	Analyze the main principles that guide the learning process in AI systems?	L4	CO4	5 M
	b)	Illustrate the decision tree learning with an example.	L3	CO4	5 M

<div align="center">OR</div>

11	a)	Discuss the Theory of Learning in AI.	L2	CO3	5 M
	b)	Describe statistical learning methods in AI.	L2	CO3	5 M