Reg. No.																

Question Paper Code	14671

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2026

Third Semester

Artificial Intelligence and Machine Learning

24AMPC301 - FUNDAMENTALS OF ARTIFICIAL INTELLIGENCE

Regulations - 2024

Duration: 3 Hours | Max. Marks: 100

PART – A (i) (MCQ)
(16 × 1 = 16 Marks)
Answer ALL Questions

		Marks	K – Level	CO
1.	What does AI stand for? a) Automated Intelligence b) Artificial Intelligence c) Advanced Internet d) Artificial Integration	1	K1	CO1
2.	Which search strategy does not use domain knowledge? a) Heuristic Search b) Informed Search c) Uninformed Search d) Best First Search	1	K1	CO1
3.	Why are heuristic methods preferred in informed search? a) They ignore goals b) They help reach solutions faster c) They increase randomness d) They remove constraints	1	K2	CO1
4.	Which algorithm is inspired by natural evolution? a) Hill Climbing b) Simulated Annealing c) Genetic Algorithm d) Breadth First Search	1	K1	CO2
5.	In Constraint Satisfaction Problems, constraints are used to: a) Increase memory b) Restrict possible solutions c) Reduce processing speed d) Create new variables	1	K1	CO2
6.	What is the main advantage of Alpha-Beta pruning in game playing? a) It increases the game size b) It reduces unnecessary node evaluation c) It changes game rules d) It removes players	1	K2	CO2
7.	Which logic uses predicates and quantifiers? a) Boolean Logic b) Fuzzy Logic c) First Order Predicate Logic d) Modal Logic	1	K1	CO3
8.	Which language is commonly associated with AI programming and logic representation? a) Java b) Python c) Prolog d) C++	1	K1	CO3
9.	How does forward chaining differ from backward chaining? a) Forward chaining starts from facts, backward chaining starts from goals b) Both work exactly the same way c) Backward chaining ignores rules d) Forward chaining uses no inference rules	1	K2	CO3
10.	Why are ontologies useful in AI systems? a) They reduce storage devices b) They organize and represent knowledge clearly c) They replace sensors d) They increase processor temperature	1	K2	CO4

11.	STRIPS notation is mainly used in:		*1*	*K1*	*CO4*
	a) Networking	b) Database Management			
	c) Planning	d) Encryption			
12.	Why is PDDL important in AI planning?		*1*	*K2*	*CO4*
	a) It stores multimedia files	b) It defines planning problems in a standard format			
	c) It improves network security	d) It creates hardware circuits			
13.	Which AI application is used for understanding human language?		*1*	*K1*	*CO5*
	a) Robotics	b) Data Mining			
	c) Natural Language Processing	d) Computer Graphics			
14.	Self-driving cars mainly depend on:		*1*	*K1*	*CO5*
	a) Sensors and perception	b) Manual steering			
	c) Wired communication only	d) Mechanical switches			
15.	Explainable AI mainly focuses on:		*1*	*K1*	*CO6*
	a) Increasing hardware size	b) Making AI decisions understandable			
	c) Reducing internet usage	d) Improving battery life			
16.	Why is Responsible AI important in modern applications?		*1*	*K2*	*CO6*
	a) To avoid ethical and transparency issues	b) To reduce electricity usage only			
	c) To replace human users	d) To eliminate all software errors			

PART – A (ii) (Short Answer Questions)
(6 × 3 = 18 Marks)
Answer ALL Questions

17.	Explain the characteristics of an intelligent agent.	*3*	*K2*	*CO1*
18.	Discuss the importance of Alpha-Beta pruning in game playing.	*3*	*K2*	*CO2*
19.	Describe the process of forward chaining.	*3*	*K2*	*CO3*
20.	Construct a simple planning problem using PDDL notation.	*3*	*K3*	*CO4*
21.	Demonstrate the working process of a self-driving car.	*3*	*K3*	*CO5*
22.	Apply Explainable AI concepts to improve transparency in AI systems.	*3*	*K3*	*CO6*

PART - B (Descriptive Answer Questions)
(6 × 11 = 66 Marks)
Answer ALL Questions

23.	a)	Apply uninformed search strategies to solve a real-world pathfinding problem and compare their performance.	*11*	*K3*	*CO1*
		OR			
	b)	Construct how intelligent agents interact with their environment by designing a simple AI agent for a practical application.	*11*	*K3*	*CO1*
24.	a)	Apply Genetic Algorithms to solve an optimization problem and explain the steps involved in the process.	*11*	*K3*	*CO2*
		OR			
	b)	Develop the use of Alpha-Beta pruning in game playing by solving a sample game tree.	*11*	*K3*	*CO2*

25.	a)	Apply Forward Chaining and Backward Chaining techniques to infer conclusions from a given knowledge base.	*11*	*K3*	*CO3*
		OR			
	b)	Construct a semantic network and demonstrate how knowledge is represented using ontologies in AI systems.	*11*	*K3*	*CO3*
26.	a)	Apply STRIPS notation to represent and solve a block world planning problem.	*11*	*K3*	*CO4*
		OR			
	b)	Solving a real-world planning scenario using Goal Stack Planning and Means-End Analysis.	*11*	*K3*	*CO4*
27.	a)	Apply Natural Language Processing techniques in designing an AI-based chatbot system.	*11*	*K3*	*CO5*
		OR			
	b)	Demonstrate how AI techniques are used in autonomous vehicles for perception, navigation, and decision-making.	*11*	*K3*	*CO5*
28.	a)	Apply Explainable AI techniques to improve transparency and trust in an AI-based healthcare system.	*11*	*K3*	*CO6*
		OR			
	b)	Demonstrate how Responsible AI principles can be implemented to address ethical challenges in AI applications.	*11*	*K3*	*CO6*