Reg. No.															

Question Paper Code	13488

B.E. / B.Tech. - DEGREE EXAMINATIONS, APRIL / MAY 2025

Sixth Semester

Artificial Intelligence and Data Science

(Common to Computer Science and Engineering (AIML))

20AIEL608 - AGENT BASED INTELLIGENT SYSTEMS

Regulations - 2020

Duration: 3 Hours Max. Marks: 100

PART - A (MCQ) (10 × 1 = 10 Marks)

Answer ALL Questions

		Marks	*K – Level*	*CO*
1.	An intelligent agent is _____. (a) A system that can only act based on pre-programmed rules (b) A system that perceives its environment and acts rationally (c) A system that always acts randomly (d) A system that ignores the environment	*1*	*K1*	*CO1*
2.	Identify heuristic which is useful for variable selection in CSPs. (a) Greedy best-first search (b) Maximum Path Cost heuristic (c) Minimum Remaining Values heuristic (d) Breadth-first heuristic	*1*	*K2*	*CO1*
3.	First-Order Logic (FOL) is also known as Predicate logic which is used to _____. (a) Represent actions (b) Represent relationships or properties (c) Represent random numbers (d) Represent constraints	*1*	*K1*	*CO2*
4.	Identify the concerns related to Knowledge Representation. (a) How knowledge is stored for problem-solving (b) How systems transmit data (c) How fast machines can compute numbers (d) How machines can randomly guess	*1*	*K2*	*CO2*
5.	A state space graph differs from a state space tree because _____. (a) Trees allow revisiting states, graphs do not (b) Graphs allow revisiting states (detect cycles), trees do not (c) Trees are more memory-efficient than graphs (d) Trees cannot represent problem spaces	*1*	*K2*	*CO3*
6.	Identify the process of Multi-Agent Planning. (a) Planning for a single autonomous agent (b) Planning for multiple agents that may collaborate or compete (c) Planning with no agents involved (d) Planning only in a static environment	*1*	*K2*	*CO3*
7.	In a Bayesian Network, each node represents _____ and edges represent _____. (a) A probability distribution, Causal or dependency relationships (b) A logical rule, Memory addresses (c) A database record, Data transmission channels (d) A utility function, Time steps	*1*	*K1*	*CO4*
8.	In AI, complex decision-making is often modeled using _____. (a) Simple rules only (b) Linear regression (c) Multi-Criteria Decision Analysis (MCDA) (d) Pure chance	*1*	*K1*	*CO4*

9.	Identify the ethical concern which is often associated with the future of AI. (a) Decrease in internet usage (b) Loss of biodiversity (c) Bias and fairness in decision-making (d) Global warming	*1*	*K2*	*CO5*
10.	In Reinforcement Learning, an agent learns. (a) Following fixed rules (b) Observing actions in a pre-recorded dataset (c) Interacting with the environment and receiving feedback (d) Directly solving optimization problems	*1*	*K1*	*CO6*

PART - B (12 × 2 = 24 Marks)

Answer ALL Questions

11.	Define Intelligent agent. Provide the example for intelligent agent in real time.	*2*	*K1*	*CO1*
12.	Infer game playing agent.	2	*K2*	*CO1*
13.	List the elements and symbols of first order logic.	2	*K1*	*CO2*
14.	What do you mean by resolution strategies?	2	*K1*	*CO2*
15.	Brief contingency planning.	2	*K1*	*CO3*
16.	Give the characteristics of multi-agent system.	2	*K1*	*CO3*
17.	Interpret the Baye's rule.	2	*K2*	*CO4*
18.	State Utility Theory.	2	*K1*	*CO4*
19.	Explain the significance of explainable AI.	2	*K2*	*CO5*
20.	Describe the role of edge computing in future AI.	2	*K2*	*CO5*
21.	Mentions the methods of statistical learning.	2	*K1*	*CO6*
22.	Outline the agent communication.	2	*K2*	*CO6*

PART - C (6 × 11 = 66 Marks)

Answer ALL Questions

23.	a) i)	Summarize the characteristics of Intelligent Agents.	5	*K2*	*CO1*
	ii)	Explain the concepts of problem solving using 3x3 eight puzzle solving problem.	*6*	*K2*	*CO1*
		OR			
	b) i)	Classify and explain the heuristic search strategies with example.	5	*K2*	*CO1*
	ii)	Outline the constraint satisfaction problem. How can you relate CSP with a textile shopping?	*6*	*K2*	*CO1*
24.	a)	Describe the predicate logic. State the representation of facts in predicate logic with reference to suitable example.	*11*	*K2*	*CO2*
		OR			
	b) i)	Discuss how Knowledge Representation is related to reasoning in AI.	5	*K2*	*CO2*
	ii)	Paraphrase the importance of representing objects, actions, and events for building intelligent systems.	*6*	*K2*	*CO2*
25.	a)	Explain the steps involved in partial order planning. Illustrate with suitable example.	*11*	*K2*	*CO3*
		OR			
	b)	Compare and contest the conditional planning and continuous planning with example.	*11*	*K2*	*CO3*
26.	a)	Explain Bayes' Theorem with an example. How is it useful in decision-making under uncertainty?	*11*	*K2*	*CO4*
		OR			

	b)	Discuss about to exact inference in Bayesian network.	*11*	*K2*	*CO4*
27.	a)	Illustrate the current trends in the development of intelligent agents.	*11*	*K2*	*CO5*
		OR			
	b)	Interpret the major challenges and ethical concerns that may arise with the advancement of AI in the future. How can they be addressed?	*11*	*K2*	*CO5*
28.	a)	Examine any two Statistical Learning Methods with example.	*11*	*K3*	*CO6*
		OR			
	b)	Apply the types of formal grammars as per Chomsky hierarchy with suitable example.	*11*	*K3*	*CO6*