K. K. Wagh Institute of Engineering Education & Research, Nashik

(An Autonomous Institute From A.Y. 2022-23)

WINTER-2025	
Exam Seat No.:	
Academic Year:2025-2026	Semester:V
Class:TY	Program:B.Tech
Branch Code:ADS/COM/CSD	Pattern:2022
Name of Course:Artificial Intelligence	Course Code:ADS223002
Max. Marks:60	Duration:2.30 Hrs.

Instructions: Candidates should read carefully the instructions printed on the Question Paper and on the cover page of the Answer Book, which is provided for their use.

1. This question paper contains __02___page(s).
2. Answer to each new question is to be started on a new page.
3. Assume suitable data wherever required, but justify it.
4. Draw the neat labelled diagrams, wherever necessary.
5. The last columns indicates the Course Outcome and level of Blooms Taxonomy of the Question/sub-question.

		Marks	CO
Question No. 1			
1	Explain how the problem-solving approach is applied to typical AI problems, giving a suitable example.	(6)	CO1
Question No. 2			
2	Explain Hill Climbing search algorithm with its example.	(6)	CO2
Question No. 3			
3.a)	Explain the concept of Alpha-Beta pruning in game trees.	(6)	CO3
	OR		
3.b)	What is a Constraint Satisfaction Problem (CSP)? Give an example.	(6)	CO3
3.c)	What is the N-Queens Problem and how is it solved using backtracking (Consider N=4)?	(6)	CO3
	OR		
3.d)	Describe the Arc-Consistency algorithm AC-3 and its role in CSPs.	(6)	CO3
3.e)	What is inference in CSPs, and how does it differ from constraint propagation?	(4)	CO3
	OR		

3.f) Apply CSP. Write variables, domains, constraints and draw a hyper graph for given crypt arithmetic puzzle (4) CO3

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F O U R

Solve the puzzle and write values for each character.

Question No. 4

4.a) Describe the syntax and semantics of propositional logic with examples. (6) CO4

OR

4.b) Explain the concept of knowledge-based agents in Artificial Intelligence. Discuss their role in decision-making and how they utilize knowledge representation and reasoning to perform tasks effectively with example. (6) CO4

4.c) Explain in detail what forward chaining. Also write the algorithm for forward chaining and give one suitable example (6) CO4

OR

4.d) Prove the following statement by backward chaining algorithm and draw the tree also. (6) CO4
"Gita likes all kinds of food.
Mango and chapati are food.
Gita eats almond and is still alive.
Anything eaten by anyone and is still alive is food."

Prove "Gita likes almond".

4.e) Illustrate the difference between Propositional Logic (PL) and First-Order Logic (FOL) (4) CO4

OR

4.f) Explain the concept of unification in FOL. Provide examples of successful and unsuccessful unification. (4) CO4

Question No. 5

5.a) Define Ontology and explain the importance of Ontological Engineering in Artificial Intelligence (6) CO5

OR

5.b) Define Events and Mental Events. Explain how events and mental events are represented in knowledge base (6) CO5

5.c) Discuss the role of ontologies in knowledge representation. How do they improve interoperability among different systems? (6) CO5

OR

5.d) Define mental objects and discuss their relevance in AI (6) CO5

5.e) Describe the relations between categories with example (4) CO5

OR

5.f) Identify and describe key events that occur within the Internet Shopping World (4) CO5

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