

# CBCS SCHEME

USN

BAI654D

**Sixth Semester B.E./B.Tech. Degree Examination, June/July 2025**

## Introduction to Artificial Intelligence

Time: 3 hrs.

Max. Marks: 100

*Note: 1. Answer any FIVE full questions, choosing ONE full question from each module.  
2. M : Marks , L: Bloom's level , C: Course outcomes.*

Module – 1			M	L	C																		
Q.1	a.	Define artificial intelligence, classify the task domains of artificial intelligence.	10	L2	CO1																		
	b.	Construct the state space tree and show one possible solution for the following given initial and goal state of the 8-puzzle problem : <div><div><table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>8</td><td>5</td><td>6</td></tr><tr><td>4</td><td>7</td><td></td></tr></table><p>Initial state/ Configuration (Start)</p></div><div>⇒</div><div><table><tr><td>1</td><td>2</td><td>3</td></tr><tr><td>4</td><td>5</td><td>6</td></tr><tr><td>7</td><td>8</td><td></td></tr></table><p>Goal state/ Configuration (Final)</p></div></div>	1	2	3	8	5	6	4	7		1	2	3	4	5	6	7	8		10	L3	CO1
1	2	3																					
8	5	6																					
4	7																						
1	2	3																					
4	5	6																					
7	8																						
OR																							
Q.2	a.	A water jug problem states “you are provided with two jugs, first one with 6-gallon capacity and the second one with 8-gallon capacity. Neither have any measuring markers on it”. How can you get exactly half of water into 8-gallon jug? i) Write down the production rules for the above problem ii) Construct the state space tree with any one possible solution.	10	L4	CO1																		
	b.	Discuss the State of the Art with respect to AI.	2	L3	CO1																		
	c.	Explain in detail generate and Test algorithms.	8	L2	CO1																		
Module – 2																							
Q.3	a.	What are the components of first-order logic? Explain each with an example.	10	L2	CO2																		
	b.	Discuss the forward and backward chaining/reasoning algorithm in propositional logic.	10	L3	CO2																		
OR																							
Q.4	a.	Define the following with examples in respect of sentences in proposition logic, i) Logical equivalence ii) Validity or tautology iii) Satisfiability or contingency iv) Contradiction.	10	L1	CO2																		
	b.	Discuss the resolution in predicate logic algorithm. Write the example also.	10	L3	CO2																		

1 of 2

**Module – 3**

<b>Q.5</b>	<b>a.</b>	Define quantifier, explain the types of quantifiers with examples.	<b>10</b>	<b>L2</b>	<b>CO3</b>
	<b>b.</b>	What is logic programming? Explain with an appropriate example.	<b>10</b>	<b>L2</b>	<b>CO3</b>

**OR**

<b>Q.6</b>	<b>a.</b>	Look at the following sentences : i) Marcus was a man ii) Marcus was a Pompeian iii) Marcus was born in 040 AD iv) All men are mortal v) All Pompeian's died in 079 AD vi) No mortal lives for more than 150 years Convert them into predicate logic.	<b>10</b>	<b>L3</b>	<b>CO3</b>
	<b>b.</b>	What do you mean by uncertainty? Discuss briefly the approaches to deal with the same.	<b>10</b>	<b>L3</b>	<b>CO3</b>

**Module – 4**

<b>Q.7</b>	<b>a.</b>	Explain Minmax search algorithm.	<b>10</b>	<b>L2</b>	<b>CO4</b>
	<b>b.</b>	Explain Alpha Beta pruning Algorithm with example in AI.	<b>10</b>	<b>L2</b>	<b>CO4</b>

**OR**

<b>Q.8</b>	<b>a.</b>	Discuss the steps /phases of natural language processing with the advantages and disadvantages.	<b>10</b>	<b>L3</b>	<b>CO4</b>
	<b>b.</b>	Write Depth First Search Iterative Deepening Algorithm.	<b>10</b>	<b>L2</b>	<b>CO4</b>

**Module – 5**

<b>Q.9</b>	<b>a.</b>	Explain various learning techniques with examples.	<b>10</b>	<b>L2</b>	<b>CO5</b>
	<b>b.</b>	Discuss inductive learning with an example.	<b>10</b>	<b>L3</b>	<b>CO5</b>

**OR**

<b>Q.10</b>	<b>a.</b>	What is an expert system? List and explain various expert systems.	<b>10</b>	<b>L2</b>	<b>CO5</b>
	<b>b.</b>	What is an analogy? Explain deviational analogy.	<b>10</b>	<b>L2</b>	<b>CO5</b>

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