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MCA
(SEM III) THEORY EXAMINATION 2025-26
ARTIFICIAL INTELLIGENCE

TIME: 3 HRS**M.MARKS: 70**

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A**1. Attempt all questions in brief.****02 x 7 = 14**

Q no.	Question	CO	Level
a.	Define Artificial Intelligence and mention any two application areas of AI.	1	K1
b.	What is a search strategy in AI? Give one example each of an uninformed and an informed search technique.	2	K1
c.	What is propositional logic? State one difference between propositional logic and first-order logic.	3	K1
d.	Differentiate between supervised learning and unsupervised learning in machine learning.	4	K2
e.	Define pattern recognition and describe two real-world applications of pattern recognition.	5	K2
f.	Explain the concept of an intelligent agent with an example.	1	K2
g.	What is a heuristic function in AI search? Give an example of a heuristic.	2	K2

SECTION B**2. Attempt any three of the following:****07 x 3 = 21**

a.	Describe the structure and components of a simple reflex agent.	1	K2
b.	Explain the basic structure of an intelligent agent and discuss two application areas of AI.	1	K2
c.	Explain forward chaining and backward chaining in rule-based reasoning, giving one example of each.	3	K3
d.	Explain the Expectation-Maximization (EM) algorithm for handling missing data in machine learning, with an example.	4	K4
e.	Explain the working of the k-means clustering algorithm with an example.	5	K2

SECTION C**3. Attempt any one part of the following:****07 x 1 = 07**

a.	What is the Turing Test? Explain its significance in evaluating machine intelligence.	1	K2
b.	Explain the concept of an intelligent agent and describe the architecture of a basic agent.	1	K2

4. Attempt any one part of the following:**07 x 1 = 07**

a.	Explain Uniform-Cost Search and illustrate its working with an example.	2	K3
b.	Describe Alpha-Beta pruning in adversarial search and discuss its advantages.	2	K3

5. Attempt any one part of the following:**07 x 1 = 07**

a.	Explain forward chaining and backward chaining in rule-based reasoning, giving one example of each.	3	K3
b.	Explain resolution in propositional logic with an example.	3	K3



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6. Attempt any *one* part of the following: 07 x 1 = 07

a.	Explain the concept of reinforcement learning and give an example of its application.	4	K2
b.	Describe reinforcement learning and provide a real-life example.	4	K4

7. Attempt any *one* part of the following: 07 x 1 = 07

a.	Explain the principle of the Support Vector Machine (SVM) for classification.	5	K2
b.	Explain the concept of Principal Component Analysis (PCA) and evaluate its importance in pattern recognition.	5	K5

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