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MCA
(SEM V) THEORY EXAMINATION 2023-24
SUBJECT-ARTIFICIAL INTELLIGENCE
MODEL PAPER-1
PAPER CODE KCA -301

Time: 3 Hours

Total Marks: 100

Note: Attempt all Sections. If require any missing data; then choose suitably.

SECTION A

1. Attempt all questions in brief.

2 x 10 = 20

a.	How goal-based agent works?
b.	Define the Heuristic function with example.
c.	What do you mean by alpha-beta pruning? Explain in brief.
d.	Differentiate between human vision and computer vision.
e.	Define the term production system.
f.	Briefly explain forward chaining with example.
g.	What do you mean by state space representation of a problem?
h.	With the help of a diagram, explain the functioning of a classifier.
i.	What do you understand by the term probabilistic reasoning?
j.	Write a short note on nearest neighbor rule.

SECTION B

2. Attempt any three of the following:

10x3=30

a.	What are the different categories of AI tasks? Explain.
b.	Explain the concept of Simulated Annealing. Also write its algorithm.
c.	Discuss algorithm to convert predicate formula to clause form with proper example.
d.	Describe Expectation Maximization algorithm for learning with hidden data.
e.	Explain the concept of Principle Component Analysis with the help of suitable diagram.

SECTION C

3. Attempt any one part of the following:

10x1=10

a.	What is an intelligent agent? Discuss the structure of an intelligent agent with the help of a diagram. Also explain the functioning of utility-based intelligent agent.
b.	Describe Hidden Markov Model.

4. Attempt any one part of the following:

10x1=10

a.	Describe the EM Algorithm.
b.	Discuss and compare Depth-first search and Breadth-search methods with proper diagram.

5. Attempt any one part of the following:

10x1=10

a.	What is Reinforcement learning? Explain in detail.
b.	Convert the following into clause form- (i) black $\rightarrow \sim$ white (ii) white $\rightarrow \sim$ black $\wedge \sim$ yellow $\wedge \sim$ red (iii) snow \rightarrow white (iv) black \rightarrow coal \vee dark (v) white \rightarrow bright

6. Attempt any one part of the following:

10x1=10

a.	What is the difference between human learning and machine learning process? Discuss. Also differentiate between supervised and unsupervised learning.
b.	What is Principle Component Analysis? Explain in detail.

7. Attempt any one part of the following:

10x1=10

a.	What do you mean by statistical pattern recognition? Explain any one statistical pattern recognition model with proper diagram.
b.	What is Linear Discrimination Analysis? Explain in detail.

