

MCA (DUAL DEGREE)
(SEM-V) THEORY EXAMINATION 2019-20
ARTIFICIAL INTELLIGENCE

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 various foundation areas of Artificial Intelligence.

4. Attempt any one part of the following:**10x1=10**

a.	What do you mean by hill climbing? Explain different types of hill-climbing searching methods.
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 do you mean by Bayesian network? Discuss steps to construct a Bayesian network.
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

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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.	Explain the functioning of decision tree for classification using a suitable diagram. Also state limitations of decision tree.

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.	Discuss and compare different types of support vector machine.