Printed Pages: 2 **Sub Code:KCA301**

Paper Id: 232332 **Roll No.** | | | | | | | | | | |

MCA
(SEM III) THEORY EXAMINATION 2022-23
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) What is an intelligent agent?
b) State any two foundation areas of artificial intelligence.
c) Compare uninformed and informed search methods.
d) Briefly explain the concept of adversarial search.
e) Differentiate between procedural and declarative knowledge.
f) What do you mean by the knowledge representation?
g) Define the term machine learning.
h) Write a short note on reinforcement learning.
i) Define the term pattern with example.
j) State nearest neighbor rule.

SECTION B

2. Attempt any *three* of the following: **10 x 3 = 30**

a) Discuss various categories of artificial intelligence tasks.
b) Explain Best-first search algorithm with the help of a diagram.
c) Discuss and compare forward and backward chaining methods with example.
d) What do you mean by statistical learning? Explain Naïve Bayes model.
e) Define the term clustering. Discuss k-means clustering algorithm.

SECTION C

3. Attempt any *one* part of the following: **10 x 1 = 10**

a) Discuss functioning of model based intelligent agent with the help of a diagram.
b) Explain various steps involved in natural language processing.

4. Attempt any *one* part of the following: **10 x 1 = 10**

a) Explain AND-OR graph searching algorithm.
b) Discuss the concept of MIN MAX search algorithm with diagram.

5. Attempt any *one* part of the following: **10 x 1 = 10**

a) Explain concept and use of clause form conversion algorithm.
b) What is Bayesian network? Explain steps to create a Bayesian network.

6. Attempt any *one* part of the following: 10 x 1 = 10

a) What do you mean by Maximum Likelihood estimation? Also explain Expectation Maximization algorithm.
b) Discuss steps and algorithm to construct a decision tree.

7. Attempt any *one* part of the following: 10 x 1 = 10

a) Explain design cycle of a pattern recognition system with diagram.
b) Explain need and concept of principle component analysis in pattern recognition process.