



23003363

QP CODE: 23003363

Reg No :

Name :

M Sc DEGREE (CSS) EXAMINATION, APRIL 2023

First Semester

M.Sc. Artificial Intelligence

CORE - AI010102 - INTRODUCTION TO ARTIFICIAL INTELLIGENCE

2019 ADMISSION ONWARDS

5C1346F1

Time: 3 Hours

Weightage: 30

Part A (Short Answer Questions)

*Answer any **eight** questions.*

Weight 1 each.

1. Discuss the approaches similar to human behaviour leading to the definition of AI.
2. Discuss the physical symbol hypothesis.
3. Discuss Uninformed search techniques. Why are they called so?
4. Explain the method of comparing structures like sets and bags in AI programs.
5. What are syntax rules of Propositional Logic?
6. What is closed world assumption?
7. Define Futility cutoff.
8. Why planning is essential in AI problems?
9. Describe Valiant's "theory of the learnable" approach.
10. Give a brief history of Expert Systems. Mention a few applications of Expert Systems.

(8×1=8 weightage)

Part B (Short Essay/Problems)

*Answer any **six** questions.*

Weight 2 each.

11. Describe Heuristic Search. Give few examples of heuristic functions.





12. Discuss the working of Breadth First search algorithm for the farmer-fox-goose-grain puzzle. In this puzzle a farmer wishes to cross a river taking his fox, goose and grain with him. He can use a boat which will accommodate only the farmer and one possession. If the fox is left alone with the goose, the goose will be eaten. If the goose is left alone with the grain, it will be eaten. Draw a state space search tree and explain the algorithm.
13. Describe the use of structures employed in matching giving importance to variables.
14. What are the strategies those can be applied to improve the speed of resolution process.
15. Discuss the working of a Problem Solver with Truth Maintenance Systems.
16. Clearly mention the heuristics for Planning using Constraint Posting.
17. Explore the learning scheme adopted in Samuel's Checkers program.
18. Describe the Version Space approach to Concept Learning.

(6×2=12 weightage)

Part C (Essay Type Questions)

Answer any two questions.

Weight 5 each.

19. Specify a global database, rules and a termination condition for a production system to solve the following missionaries and cannibals problem. Three missionaries and three cannibals must cross a river using a boat which can carry at most two people, under the constraint that, for both banks, that the missionaries present on the bank cannot be outnumbered by cannibals. The boat cannot cross the river by itself with no people on board.
20. Which algorithm is suitable for AND-OR Graphs? Explain each step of algorithm with proper sketches.
21. Convert the following statement to clause form. All Romans who know Marcus either hate Caesar or think that anyone who hates anyone is crazy.
22. Draw the game tree for "Grundy's game" and discuss the working of MINIMAX procedure. The rules of the game are as follows: Two players have in front of them a single pile of objects say a stack of building blocks. The first player divides the original stack into two stacks that must be unequal. Each player alternately thereafter does the same to some single stack when it is his turn to play. The game proceeds until every stack has either just one block or two. The player who first cannot play is the loser. Assume that there are seven blocks in the stack and player MIN plays first. Second player is max.

(2×5=10 weightage)

