National Institute of Technology Calicut

Department of Computer Science and Engineering

CS4023D Artificial Intelligence - Monsoon 2023-24

Assignment (Part A) | Due Date: 16 Nov 2023 | Total Marks: 15

Instructions:

1: You can use any programming language of your choice.

2: Prepare a PDF file containing the screen shots of results for each case along with justifications for the conclusions that you make as well for the results obtained.

3: Merge your source files and the above PDF file in a single folder, compress it and upload the compressed file at the link provided in the Eduserver course page.

Q1. [8 Marks] Solve the *4-Queens* problem as constraint satisfaction problem. Assume that a board configuration will be input by the user with any number of queens (from 0-4) placed initially.

Draw the state space of board configurations starting from the input configuration to the goal state. If no exact solution exists, then display the best state obtained closest to the goal state.

Q2. [7 Marks] Assume that you are given a set of 4 random words, each of length 26. The goal is to obtain a word where similar letters are placed together (no need to consider their alphabetical order).

Solve this problem using *Genetic Algorithm*. Define your fitness function, stopping criteria and cross over details clearly.
