Time: 20 minutes **Quiz 1 (Set B)** **Total Marks: 15**

CSE 4617: Artificial Intelligence

Name: **Student ID:**

The Missionaries and Cannibals problem goes as follows: three missionaries and three cannibals are on one side of a river, along with a boat that can hold one or two people. The goal is to take all the missionaries and cannibals to the other side of the river. In one move, one or two people can use the boat (given it is on their side) to go the other side of the river. However, on any side, the cannibals must not outnumber the missionaries (if they do, the cannibals will eat the missionaries).

We want to formulate this scenario as a search problem. Given the missionaries, cannibals, and a boat are on one side of the river, our goal is to apply a search algorithm to find out the plan to take them to the other side.

1. Model the state space graph for this problem. Your model should describe the states, actions available, successor function, start state, and goal test. 10
2. Considering both the tree search and graph search variants of Breadth-First Search (BFS) and Depth First Search (DFS), which algorithm will you prefer to find the solution? Justify your answer. 5