Assignment # 2

Due by Oct 27, 2023 (Before Class)

Q.1. The sliding-tile puzzle consists of three black tiles, three white tiles, and an empty space in

the configuration shown in figure 1. The puzzle has two legal moves with associated costs:

A tile may move into an adjacent empty location. This has a cost of 1. A tile can hop over one or two
other tiles into an empty position. This has a cost equal to the number of tiles jumped over.

The goal is to have all the white tiles to the left of all the black tiles. The position of the

blank is not important.

    a.   Analyze the state space with respect to complexity.
    b.   Draw a search tree to one level assuming the start state as in figure 1.
    c.   Propose a heuristic for solving this problem and analyze it with respect to
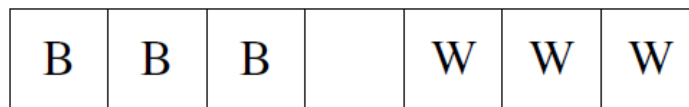   Admissibility and monotonicity.

B	B	B		W	W	W

Figure 1: Sliding Block Puzzle in Q.1

Q.2. For the tree shown in figure 2, perform the following:

    a. Minimax search showing what move gets selected as output.
    b. α-β search from left to right showing pruning and the final values of (α,β) pairs.
    c. α-β search from right to left showing pruning and the final values of (α,β) pairs.
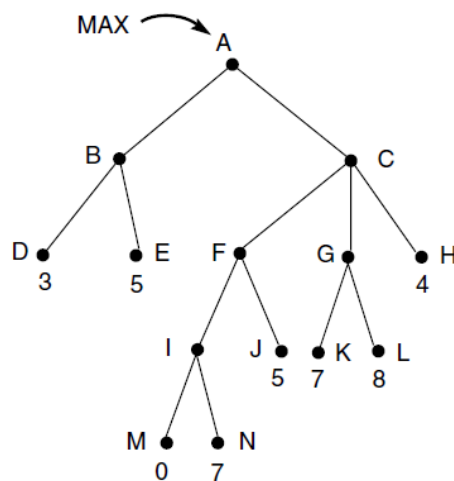   Discuss why a different pruning occurs in 'b' and 'c' above.

Figure 2: Tree for Q.2.