

Homework 2

CSE 232

April 2021

Question 1

1. Simplify the following Boolean functions by using Karnaugh map method.
 - (a) $F_1(A, B, C, D) = \sum m(0, 1, 4, 5, 8, 9, 10, 12, 13)$
 - (b) $F_2(A, B, C, D) = \sum m(3, 5, 7, 8, 9, 10, 11, 13, 15)$
2. Design logic circuits of F_1 and F_2 for A, B, C and D inputs.
3. Design Logic circuits of F_1 and F_2 by using only NAND gates as few as possible.

Question 2

1. Write the truth table that provides the following Boolean function.
 $F = AB' + AD + BC + CD' + A'B'C'D'$
2. Write the Karnaugh map of the truth table.
3. Group all 1's on the Karnaugh map to obtain simplified F function.
4. Group all 0's on the Karnaugh map to obtain simplified F' function.
5. Design the circuits of F and F' functions by using NAND gates.