

CS 320 – Spring 2009

Assignment 04 – Due: Friday, March 13

Show all your work in a clear & legible manner.

1. Write out the truth tables for the following functions (2 pts each):

a. F151

b. F46241

2. Determine the function numbers for the following functions (2 pts each):

a. $F = B' + A'C' + AC$

b. $F = A'(D' + B'C) + AD$

3. Write out the K-maps for the following functions. Use the K-maps to reduce the functions as much as possible. (4 pts each K-map) Write out a truth table to prove its equivalence to its original form. (2 pts each truth table)

a. $F = A'B'C'D + AB'C'D' + A'BCD' + AB'CD' + AB'C'D + ABCD' + ABCD$

b. $F = A'B'C' + A'BC' + A'BC + AB'C + ABC$

4. Write out the following functions in canonical form as the sum of minterms (2 pts each):

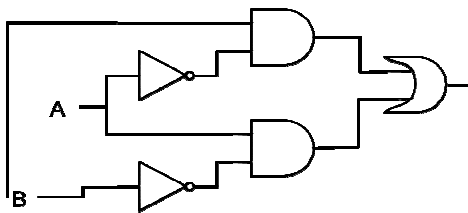
a. $F = CB + (A + B')C'$

b. $F = (C + B')D'$

5. Referring to pg 215 in WGC, write out the decode functions for segment 2 & segment 5. (2 pts each)

6. Build a half adder using only NAND gates. (5 pts)

7. Write out the function for the following circuit: (2 pts)



Extra Credit: use the postulates & theorems on pg 193 of WGC to algebraically prove your reductions in problem 3. (2 pts each)

Total points: 34