Spring 2016 – CS2420
Homework 4
Due Date : October 12th , 2016
No later than 12:45 pm

1. Obtain the truth table of the following function, and express this function in sum of minterms and product of maxterms form. Please also draw the logic diagram of its circuit with the sum of minterms expression (20 pts).

   (x + y')(y + z')

2. Express the following function into sum of minterms and product of maxterms – also , show the truth table for the functions
   (20 pts):

   F(A,B,C,D)=A' B +A'C'D + BC'

3. Convert each of the following expressions into sum of products and product of sums – also , show the truth table for each
   (40 pts):

   (a) (A'B+C)(AB+C')(AB'+C')
   (b) x' + yz (x+y') (y+z') + xy

4. Implement the following functions with two-level NAND / invert or gate circuits (assume inputs could be a, b, c, d, a', b',c',d') (20 pts) .

   (a) F(a,b,c,d)=abc'+b'c'd'+a'cd'

Remarks :

- The homework must be typed , however , **ONLY** the logic diagrams can drawn by hand using pencils. Include the following information on **the top left** hand side of the first page :-

    - Your Name :
    - Your Roster or Serial Number :
    - Homework Number : 4
    - Due Date : October 12th , 2016

- **Make sure that you write the question first then followed by your answer.**

- The homework must also be uploaded using homework upload no later than the end of class time on the due date. Use the following name format for your file name

    LastName_FirstName_CS2420-A3.zip or
    LastName_FirstName_CS2420-A3.pdf or
    LastName_FirstName_CS2420-A3.doc

- For each question , you must **show** all your work in detail by indication postulates and theorems used.

- **Missing ANY of the above items from your assignment will result in deducting 40% of the assignment grade. NO EXCEPTIONS.**

Turn in hard copy of your assignment no later than 12:45 pm on the due date. The hard copy must be **stapled**. **No Late assignment will be accepted and a grade of zero will be assigned. If you are absent on the assignment's due date , a grade of zero will be recorded .**

- **Copying the assignment from others will result in grade ZERO.**