

**Fall 2016 - CS2420**  
**Homework 3**  
**Due Date : September 28<sup>th</sup> , 2016**

1) Find the Dual of each of the following functions ( 10 pts ):

A)  $F = A'(B+C') + BD$

B)  $W = (A'+D)(A'C'+B)$

2) Find the Complement of each of the following functions then simplify ( 20 pts ).

A)  $X = A B' + A' B$

B)  $Z = (A + B' + C) (A' B' + C) (A + B' C')$

3) Simplify the following Logical Expressions ( 40 pts ):

A)  $C + (BC)'$

B)  $A(A+A')+B$

C)  $(A+B)(A'+B)B'$

D)  $(AB)'(A'+B)((B'+B)$

4) Prove by algebraic manipulation that the following expressions are equivalent ( 30 pts ).

A)  $X'Y' + XY = (XY' + X'Y)'$

B)  $ABD + A'BC + BCD = ABD + A'BC$

## Remarks :

- The homework **must be typed**. Include the following information on the top left hand side of the first page :-
  - Your Name :
  - Your Major :
  - Your Roster or Serial Number :
  - Homework Number : 3
  - Due Date : September 28<sup>th</sup> , 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 questions 2-4 , 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 35% of the assignment grade. NO EXCEPTIONS.**
- Turn in hard copy of your assignment no later than the end of class time on the due date. The hard copy must be **stapled**. **No Late assignment will be accepted and a grade of zero will be assigned. Missing hard copy will also result in assigning a grade of zero for that assignment.**
- **Copying the assignment from others will result in grade ZERO.**