Fall 2016 – CS2420
Homework 7
Due Date : Wednesday - November 30th , 2016 class time

1) Using The Moore Model , create a state diagram for the following candy machine .

- The machine Release item after 25 cents are deposited
- The machine has a Single coin slot for quarters , dimes, nickels
- The machine will not return any changes back.

2) Design a four-bit priority encoder with the following input but with the priority of input $D_2 > D_1 > D_0 > D_3$

Inputs				Outputs		
D_0	D_1	D_2	D_3	x	y	V
0	0	0	0	X	X	0
1	0	0	0	0	0	1
X	1	0	0	0	1	1
X	X	1	0	1	0	1
X	X	X	1	1	1	1

– Construct the Truth Table
– Use K-map to get the simplest function for each output
– Implement the circuit

3)   A combinational circuit is specified by the following Boolean function :

$F_1 (A , B , C) = \sum_m (2 , 5 , 6)$

$F_2 (A , B , C) = \sum_m (1 , 3 , 4)$

- Implement the circuit with a 3 x 8 decoder and OR gates. Use block diagram for the decoder

4) Implement the following Boolean function with a 4 x 1 multiplexer.

$F (A , B , C) = \sum (1 , 2 , 5 , 7)$

Note : Each Question worth 25 points.

Remarks :

- The homework does not have to be typed , however , it must be written using **pencils** only . Include the following information on **the top left** hand side of the first page :-

    - Your Name :

    - Your Roster or Serial Number :

    - Homework Number : 7
    - Due Date : November 30th , 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-A7.zip or
    LastName_FirstName_CS2420-A7.pdf or
    LastName_FirstName_CS2420-A7.doc

- For each question , you must **show** all your work.

- <u>**Missing ANY of the above items from your assignment will result in deducting 15 % of the assignment grade. NO EXCEPTIONS.**</u>

Turn in hard copy of your assignment no later no 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. If you are absent on the assignment's due date , a grade of zero will be recorded .**

- <u>**Copying the assignment from others will result in grade ZERO.**</u>