Ministry of Higher Education and
Scientific Research

Date: 11/6/2015
Time: 3 hours
Lecture: Enas Tariq

University of Technology
Computer Sciences Department
first trail 2014-2015

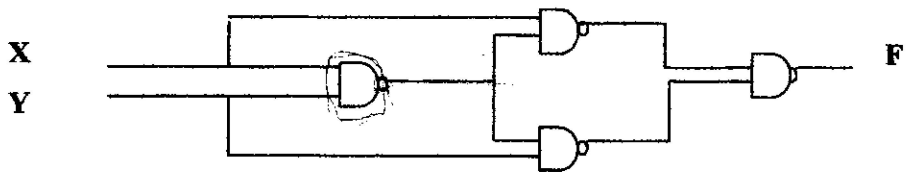
Subject: Logic Design
Class: 1st class
Branch: Networks

Note: Answer Five Questions only.

Q1/ Answer the following:

1- Subtract hexadecimal numbers (CA2)-(A1B).
2- Convert Decimal to Binary to Gray number (44).
3- Convert hexadecimal number to Octal (E27.9).
4- Convert Octal to Decimal number (3451.61).
5- Addition Octal number (247) + (123).

Q2/ A/ Use Boolean algebra to show that following circuit is equivalent to a 2 input XOR gate?



B/ Show using Boolean algebra that

$(A\overline{B} + \overline{A}B + \overline{A} + \overline{B} + \overline{C})(A + \overline{B} + C) = \overline{B} + \overline{A}C + A\overline{C}$?

Q3/ A/ Simplify the Boolean function that represented in the following truth table using Karnaugh map?

X	Y	Z	F
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	0
1	0	0	1
1	0	1	1
1	1	0	1
1	1	1	1

B/ Design full sub tractor.

Q4/ Simplify the following function using.

a) S.O.P $F(X, Y, Z) = \sum (1, 3, 5, 7)$

b) P.O.S $F(X, Y, Z) = \prod (1, 3, 5, 7)$

Q5/A/ Design JK master- slave flip- flop.

B/ Design Demultiplexer with A1 to 4 lines?

Q6/ A/ Draw 3 bit synchronous Binary counter.

B/ List the type of shift register with draw all.

Good Luck