Name: KEY **Id#**

COE 202, Term 102
Fundamentals of Computer Engineering

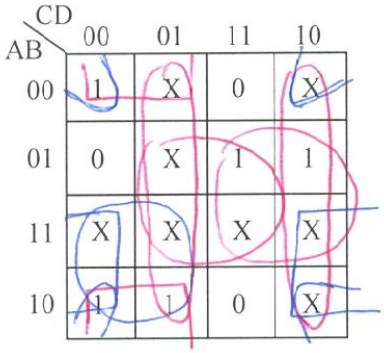
Quiz# 3

Date: Saturday, April 16

Q1.

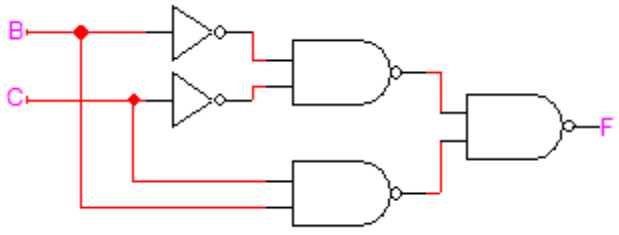
(i) Simplify the following Boolean functions **F** together with the don`t care conditions **d,** into minimal sum-of-products expressions. Identify all the *prime implicants* and the *essential prime implicants*.

F(A, B, C, D)=Σ m(0, 6, 7, 8, 9), d(A, B, C, D)=Σ m(1, 2, 5, 10, 12, 13, 14, 15)



Prime Implicants: C'D, CD', BC, BD, B'C', B'D', AC', AD'
There are no essential prime implicants.
F = B'C' + BC

(ii) Show an implementation of the function using minimal number of NAND gates.



(iii) Show an implementation of the function using minimal number of NOR gates.

AB \ CD	00	01	11	10
00	1	X	0	X
01	0	X	1	1
11	X	X	X	X
10	1	1	0	X

F’ = B’C + BC’ => F=F’’ = (B+C’)(B’+C)