Name: KEY Id#

COE 202, Term 141

Digital Logic Design

Quiz# 2

 Date: Thursday, Oct. 16

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**Q1** Use Boolean algebra to solve the following questions. Show clearly all your steps.

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| d. Express F in the logic diagram shown as a function of the input variables. Do not do any logic manipulations.   |

**Q2.** Given the Boolean function $F\left(X,Y,Z\right)=\left(X+Y\right)\left(X+Z\right)(\overbar{X}+\overbar{Z})$:

1. Express F as a **sum-of-minterms**, $F=\sum\_{}^{}m$.
2. Find the ***algebraic* product-of-Maxterms** expression for *F*.
	1. F’ = X’ Y’ + X’ Z’ + X Z = $\sum\_{}^{}m(0, 1, 2, 5,7)$

$F=\sum\_{}^{}m(3, 4,6)$.

* 1. $F=\prod\_{}^{}M\left(0,1,2,5,7\right)=\left(X+Y+Z\right)\left(X+Y+\overbar{Z}\right)\left(X+\overbar{Y}+Z\right)(\overbar{X}+Y+\overbar{Z})(\overbar{X}+\overbar{Y}+\overbar{Z})$

**Q3.** Given $F(A,B,C)=\sum\_{}^{}m\left(0,3,5,7\right)$ and $ G\left(A,B,C\right)=\prod\_{}^{}M\left(1,2,4,7\right), $ express the function $F+\overbar{G}$ as a sum-of-minterms.

$$\overbar{G}=\sum\_{}^{}m(1, 2,4,7)$$

$F+\overbar{G}=\sum\_{}^{}m(0,1, 2, 3,4, 5,7)$