Name: **Id#**

COE 202, Term 141
Digital Logic Design

Quiz# 2

Date: Thursday, Oct. 16

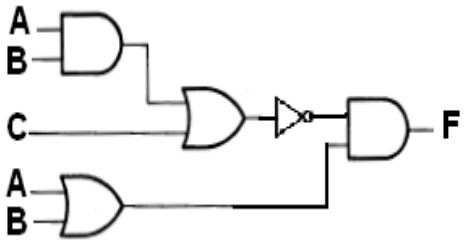
Q1 Use Boolean algebra to solve the following questions. Show clearly all your steps.

a. Reduce $F = \overline{W}X\,\overline{Z} + XW + \overline{W}X\overline{Y}Z + X\overline{W}YZ$ to 1 literal

b. Reduce $F = (x + y)(x + \overline{y}) + xyz + \overline{x}y + xy\overline{z}$ to the sum of 2 literal

c. Given $F = Y + \overline{X}\,Z + X\,\overline{Y}$, Express $\overline{F}$ as a single minterm

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 $F(X,Y,Z) = (X+Y)(X+Z)(\bar{X}+\bar{Z})$:

a. Express F as a **sum-of-minterms**, $F = \sum m$.

b. Find the ***algebraic*** **product-of-Maxterms** expression for *F*.

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