Name: KEY Id#

COE 202, Term 142

Digital Logic Design

Quiz# 2

 Date: Sunday, Feb. 22

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

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|  = A` + AB + AC` (AB`C` is absorbed by AC`)= A` + AB + AC` + B (by consensus between A` and AB)= A` + AB + AC` + B + C` (by consensus between A` and AC`)= A` + B + C`` (by Absorption; AB is absorbed by B and AC` is absorbed by C`)  |
|  = A`CD + AB + C`D + B`CD (demorgan's law)= A`CD + AB + C`D + B`CD + BCD (by consensus between A`CD and AB)= A`CD + AB + C`D + CD (B` + B) (By distributive law)= A`CD + AB + C`D + CD= A`CD + AB + D (C` + C) (By distributive law)= A`CD + AB + D = AB + D (by Absorption; A`CD is absorbed by D)  |
| **Q2.** Given the Boolean function $F\left(X,Y,Z\right)=\left(XY+Z\right)(\overbar{X}\overbar{Y}+\overbar{Z})$: 1. Express F as a **product-of-Maxterms**, $F=\prod\_{}^{}M$.

F = XYZ` + X`Y`Z = ∑m(1,6) = $\prod\_{}^{}M(0, 2, 3, 4, 5, 7)$ OR F = (X + Z)(Y + Z)(X` + Z`)(Y` + Z`) = $\prod\_{}^{}M(0, 2, 3, 4, 5, 7)$1. Find the ***algebraic* sum-of-minterms** expression for *F*.
 |
|  F = ∑m(1,6) = X`Y`Z+ XYZ`  |
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