Name: KEY Id#

COE 202, Term 132

Digital Logic Design

Quiz# 2

Date: Tuesday, Feb. 25

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# **Q1.** Prove the identity of each of the following Boolean functions using algebraic manipulation. Start with the left-hand side expression and derive from it the right-hand side expression.

A`C` + A D + B C` D = A`C` + A D + B C` D + C` D (by consensus between A`C` + A D)

= A`C` + A D + C` D (by absorption of B C` D in C` D)

= A`C` + A D (by consensus between A`C` + A D)

Another Solution:

A`C` + A D + B C` D = A`C` + A D + B C` D (A + A`)

= A`C` + A D + A B C` D + A` B C` D

= A`C` + A D ( by absorption of A B C` D in AD and absorption of A` B C` D in A` C`)

= (a + c d`) (c` + b d) ( c +d) (by Demogan’s Law)

= (a c` + a b d) (c + d) (by distributive law)

= (a c` d + a b c d + a b d) (by distributive law)

= a c` d + a b d (by absorption of a b c d in a b d)

= a d ( c` + b) (by distributive law)

**Q2.** Given the Boolean functions and .

## Give the *algebraic* sum of minterms expression for *F*.

## Express the function *G* as a sum of minterms,

## Express the function *F.G* as a sum of minterms,

## Express the function *F+G* as a product of maxterms,