

Name:

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COE 202, Term 132  
Digital Logic Design

Quiz# 2

Date: Tuesday, Feb. 25

**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.

i.  $\bar{a}\bar{c} + ad + b\bar{c}d = \bar{a}\bar{c} + ad$

ii.  $\overline{(\bar{a}[\bar{c} + d] + c[\bar{b} + \bar{d}] + \bar{c}\bar{d})} = ad(b + \bar{c})$

**Q2.** Given the Boolean functions  $F(A, B, C) = \sum m(0, 2, 4, 7)$  and  $G(A, B, C) = \prod M(0, 3, 5, 6)$ .

- i.** Give the algebraic sum of minterms expression for  $F$ .
- ii.** Express the function  $G$  as a sum of minterms,  $G = \sum m(\dots)$
- iii.** Express the function  $F \cdot G$  as a sum of minterms,  $F \cdot G = \sum m(\dots)$
- iv.** Express the function  $F + G$  as a product of maxterms,  $F + G = \prod M(\dots)$