Name: KEY Id#

COE 202, Term 141

Digital Logic Design

Quiz# 3

 Date: Tuesday, Oct. 28

#

**Q1** For the following Boolean function shown in the K-map:





#  F(A, B, C, D)=m(0, 1, 2, 3, 5, 7, 8, 10, 11, 13, 14, 15)

# Identify all possible *prime implicants* of F and indicate which of these is essential.

# Simplify the Boolean function F into a minimal sum-of-products expression.

1. **Prime Implicants:**

A’B’, CD, A’D, BD, AC, B’C, B’D’

**Essential Prime Implicants:**

BD, AC, B’D’

1. **F =** BD + AC + B’D’ + A’B’ OR **F =** BD + AC + B’D’ + A’D



**Q2** Shown to the right is the K-Map of the Boolean function G subject to the don’t care conditions D

 G(A, B, C, D) = ∑(1, 4, 5, 6, 9, 12)

 D(A, B, C, D) = ∑(0, 7, 10, 13, 15)

Derive the minimal POS expression of G.

G’ = B’ D’ + A C + C D

