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COE 202, Term 141
Digital Logic Design

Quiz# 3

Date: Tuesday, Oct. 28

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

$$F(A, B, C, D) = \sum m(0, 1, 2, 3, 5, 7, 8, 10, 11, 13, 14, 15)$$

- 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.

		CD			
		00	01	11	10
AB	00	1	1	1	1
	01	0	1	1	0
	11	0	1	1	1
	10	1	0	1	1

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

$$G(A, B, C, D) = \sum(1, 4, 5, 6, 9, 12)$$

$$D(A, B, C, D) = \sum(0, 7, 10, 13, 15)$$

Derive the minimal POS expression of G.

AB \ CD	00	01	11	10
00	X	1	0	0
01	1	1	X	1
11	1	X	X	0
10	0	1	0	X