

HW 3

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- 1. For $f(A, B, C) = \sum m(1, 2, 3, 5, 6)$
 - ▣ (a) Express it in algebraic expression of Sum of minterms.
 - ▣ (b) Draw a k-map.
 - ▣ (c) Express it in minimum SOP expressions

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~~2. For $f(A, B, C) = \prod M(0, 4, 6, 7)$~~

~~(a) Express it in algebraic expression of Product of maxterms.~~

~~(b) Draw a k-map.~~

~~(c) Express it in minimum POS expressions~~

□ 3. Plot the following functions on the K-map.

□ (a) $f(a, b, c, d) = a'c + abd' + b'c'd + cd + abc'd$

~~□ (b) $f(a, b, c, d) = (a' + b' + c)(a' + b + d)(b' + c)(c' + d)(a' + b + c' + d)$~~

- 4. Find minimum SOP and minimum POS for each of the following equations.

~~■ $f(a, b, c) = \prod M(1, 2, 3, 6)$~~

□ $f(a, b, c, d) = \sum m(0, 2, 4, 5, 10, 12, 14, 15) + \sum d(7, 8)$

□ $f(a, b, c) = \sum m(0, 1, 3, 6, 7)$

~~□ $f(a, b, c, d) = \prod M(1, 3, 5, 13) + \prod D(0, 7, 9)$~~

~~■ (D) represents don't care conditions in maxterms.~~

- 5. Draw a circuit of the following Boolean equation using only NAND gates.
(Assume that complement and uncomplemented inputs are available.)

$$f = (x \cdot y + w) \cdot z + (x + y) \cdot w$$