

Name: Answer

Instructions: Do NOT use your book, notes or calculator and answer all questions on test page (bottom and back if necessary). Work area tables provided at bottom of page.

1. Given the switching (Boolean) equation $F = A' \cdot C' + (A \cdot B)' \cdot C$, where A is the most significant and C is the least significant *literal* from the truth table

- a) Identify the minterms and write the Sum-of-Products (SOP) equation in the *minterm list* form, i.e., $F = \sum_{A,B,C} (\dots)$

$$F = \sum_{A,B,C} (0, 1, 2, 3, 5)$$

- b) Identify the Maxterms and write the Product-of-Sums (POS) equation in the *Maxterm list* form, i.e., $F = \prod_{A,B,C} (\dots)$

$$F = \prod_{A,B,C} (4, 6, 7)$$

2. Given the switching equation $F = \sum_{X,Y,Z} (1, 3, 5, 6)$ in *minterm list* form,

- a) Write the equation in canonical Sum-of-Products (SOP) form.

$$F = X'Y'Z + X'Y \cdot Z + X \cdot Y'Z + X \cdot Y \cdot Z'$$

- b) Write the equation in canonical Product-of-Sums (POS) form.

$$F = (X+Y+Z) \cdot (X+Y'+Z) \cdot (X'+Y+Z) \cdot (X'+Y'+Z')$$

problem 1

c ^{AB}	00	01	11	10
0	1	1		
1	1	1		1

--- Work Area ---

problem 2

z ^{XY}	00	01	11	10
0			1	
1	1	1		1

$$\begin{aligned}
 F &= A' \cdot C' + (A \cdot B)' \cdot C \\
 &= A' \cdot C' + (A' + B') \cdot C \\
 &= A' \cdot C' + A' \cdot C + B' \cdot C
 \end{aligned}$$