

Name \_\_\_\_\_ Student ID \_\_\_\_\_ Colleges & Schools \_\_\_\_\_ Department \_\_\_\_\_

### Homework Unit 5

- Find a minimum sum-of-products and a minimum product-of-sums expression for the following function:

$$F(A, B, C, D) = \prod M(0, 2, 10, 11, 12, 14, 15) \cdot \prod D(5, 7)$$

	00	01	11	10
00				
01				
11				
10				

- Find the minimum product-of-sums expression for the following function and underline the essential prime implicants in your answer.

$$F(w, x, y, z) = \prod M(0, 2, 4, 5, 6, 9, 14) \cdot \prod D(10, 11)$$

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00				
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- Find the minimum sum-of-products expression for  $f$ . Underline the essential prime implicants in your expression.

$$f(A, B, C, D, E) = \sum m(0, 2, 3, 5, 8, 11, 13, 20, 25, 26, 30) + \sum d(6, 7, 9, 24)$$

	bc	00	01	11	10
de					
00					
01					
11					
10					

4. Find all of the prime implicants for the following functions  $F$  and  $G$ . ( $F$  and  $G$  have seven prime implicants.)

		$bc$			
		$de$			
		00	01	11	10
$a$	1	1	1		1
	0	1		1	1
	1		1	1	1
	0			1	1
		11		1	
		10	1		

$F$

		$bc$			
		$de$			
		00	01	11	10
$a$	1				
	0	1			1
	1		1		
	0				
		11	1	1	1
		10	1	1	

$G$