

- 1 (Adapted from Problem 9 on page 43 of Dr. Eccles' book).  
 Minimize  $Z(A,B,C) = \Sigma(1,4,5,6,7)$  into And-Or logic (Sum of Products).

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		AB		
		00	01	11 10
	A			
0		0	0	1 1
1	C	1	0	1 1

$Z = A + \bar{B}C$

- 2 (Adapted from Problem 12 on page 43 of Dr. Eccles' book).  
 Minimize  $Z(A,B,C,D) = \Sigma(2,3,4,5,10,11,12,13,14,15)$  into And-Or logic (Sum of Products). If there are multiple minimal forms, give them all.

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

$Z = B\bar{C} + \bar{B}C + AB$   
 OR  
 $Z = B\bar{C} + \bar{B}C + AC$

- 3 (Adapted from Problem 24 on page 44 of Dr. Eccles' book).  
 Minimize  $Z(S3,S2,S1,S0) = \Pi(1,3,5,9,12) + d(2,6,8,14)$  into And-Or logic (Sum of Products). If there are multiple minimal forms, give them all.

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		S3S2		
		00	01	11 10
00		1	1	0 X
01		0	0	1 0
11		0	1	1 1
10		X	X	X 1

$Z = \bar{S3} \cdot \bar{S4} + S2S1 + S3S1 + S3S2S4$

-2 for each error.

- 4 (Adapted from Problem 15 on page 43 of Dr. Eccles' book).  
Minimize  $Z(A,B,C) = \Pi(1,2,3,5,6)$  into Or-And logic (Product of Sums). (Notice the pi notation.)

$\frac{5}{5}$

		AB		$\bar{B}+C$	
		00	01	11	10
C	0		0	0	
	1	0	0		0

$Z = (\bar{B}+C)(B+\bar{C})(A+B)$

$B+\bar{C}$  (circled in the map)  
 $A+B$  (circled in the map)

- 5 Minimize  $Z(a_3,a_2,a_1,a_0) = \Sigma(4,5,12,14) + d(0,6,8,13,15)$  into Or-And logic (Product of Sums). (Notice the  $\Sigma$  notation.)

$\frac{10}{10}$

		a3a2			
		00	01	11	10
a1a0	00	X	1	1	X
	01	0	1	X	0
	11	0	0	X	0
	10	0	X	1	0

$\bar{a}_1 + \bar{a}_0$  (circled in the map)  
 $a_2$  (circled in the map)

$$Z = a_2 \cdot (\bar{a}_1 + \bar{a}_0)$$