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Tugas 3 Struktur Diskrit II

1. $B = \{0, 1, 2\}$

+	0	1	2
0	0	0	0
1	0	1	1
2	0	1	2

•	0	1	2
0	0	1	2
1	1	1	2
2	2	2	2

a) aksioma yang dipenuhi : komutatif, identitas, distributif

Elemen identitas operator + : 0

Elemen identitas operator • : 0.

Truth tables: $a \cdot (b + c) = (a \cdot b) + (a \cdot c)$ & $a + (b \cdot c) = (a + b) \cdot (a + c)$

a	b	c	b+c	a-b	a-c	a-(b+c)	(a-b)-(a-c)
0	0	0	0	0	0	0	0
0	0	1	0	0	1	0	0
0	0	2	0	0	2	0	0
0	1	0	0	1	0	0	0
0	1	1	1	1	1	1	1
0	1	2	1	1	2	1	1
0	2	0	0	2	0	0	0
0	2	1	1	2	1	1	1
0	2	2	2	2	2	2	2
1	0	0	0	1	1	1	1
1	0	1	0	1	1	1	1
1	0	2	0	1	2	1	1
1	1	0	0	1	1	1	1
1	1	1	1	1	1	1	1
1	1	2	1	1	2	1	1
1	2	0	0	2	1	1	1
1	2	1	1	2	1	1	1
1	2	2	2	2	2	2	2
2	0	0	0	2	2	2	2
2	0	1	0	2	2	2	2
2	0	2	0	2	2	2	2
2	1	0	0	2	2	2	2
2	1	1	1	2	2	2	2
2	1	2	1	2	2	2	2
2	2	0	0	2	2	2	2
2	2	1	1	2	2	2	2
2	2	2	2	2	2	2	2

a	b	c	b-c	a+b	a-c	a+(b-c)	(a+b)-(a-c)
0	0	0	0	0	0	0	0
0	0	1	1	0	0	0	0
0	0	2	2	0	0	0	0
0	1	0	1	0	0	0	0
0	1	1	1	0	0	0	0
0	1	2	2	0	0	0	0
0	2	0	2	0	0	0	0
0	2	1	2	0	0	0	0
0	2	2	2	0	0	0	0
1	0	0	0	0	0	0	0
1	0	1	1	0	1	1	1
1	0	2	2	0	1	1	1
1	1	0	1	1	0	1	1
1	1	1	1	1	1	1	1
1	1	2	2	1	1	1	1
1	2	0	2	1	0	1	1
1	2	1	2	1	1	1	1
1	2	2	2	1	1	1	1
2	0	0	0	0	0	0	0
2	0	1	1	0	1	1	1
2	0	2	2	0	2	2	2
2	1	0	1	1	0	1	1
2	1	1	1	1	1	1	1
2	1	2	2	1	2	2	2
2	2	0	2	2	0	2	2
2	2	1	2	2	1	2	2
2	2	2	2	2	2	2	2

b) Tidak

Karena tidak memenuhi postulat Huntington yang keempat: Komplement.

Tidak terdapat komplement untuk bilangan 1.



$$4. f(a,b,c) = ((ab)'c)'((a'+c)(b'+c'))'$$

SOP:

$$f(a,b,c) = (ab+c')(ac'+bc)$$

$$= abc' + abc + ac' + bcc'$$

$$= abc' + abc + ac'(b+b') + b \cdot 0$$

$$= abc' + abc + abc' + ab'c' + 0$$

$$= abc + abc' + ab'c'$$

$$\text{atau } f(a,b,c) = m_7 + m_6 + m_4 //$$

pos:

$$f(a,b,c) = M_0 M_1 M_2 M_3 M_5$$

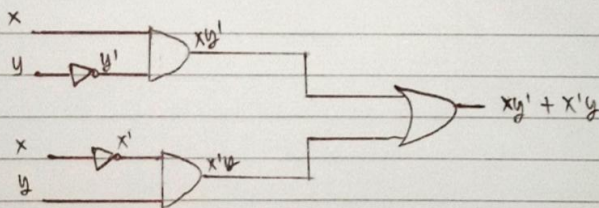
$$= (a'+b'+c')(a'+b'+c)(a'+b+c')(a'+b+c)(a+b'+c) //$$

$$6. f(w,x,y,z) = x'z + w'xy' + wyz + w'xy = x'z + w'x + wyz$$

$$\text{komplemen: } f'(w,x,y,z) = (x+z')(w+x')(w'+y'+z') //$$

$$18a. f(x,y) = xy' + x'y \quad (\text{sudah sederhana})$$

Rangkaian digitalnya:



$$19. f(w,x,y,z) = x'z + w'xy' + wyz + w'xy$$

$$= x'z + w'xy' + w'xy + wyz$$

$$= x'z + w'x(y'+y) + wyz$$

$$= x'z + w'x + wyz$$

$$\text{komplemen: } f'(w,x,y,z) = (x+z')(w+x')(w'+y'+z') //$$

$$20. \text{Rangkaian pensaklaran dari } xy + xy'z + y(x'+z) + y'z'$$

