Date

UAS SISTEM DIGITAL

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1) a. $\bar{a}\bar{b} + ab + \bar{a}b = \bar{a}b$

Pembuktian :

$= \bar{a}\bar{b} + ab + \bar{a}b$
$= \bar{a}(\bar{b} + b) + ab$
$= \bar{a} + ab \quad (15b)$
$= \bar{a} + b \rightarrow$ SAMA BENAR

b. $\bar{a} + a(\bar{a}b + \bar{b}c) = \bar{a} + b + \bar{c}$

$= \bar{a} + a(\overline{\bar{a}b} \cdot \overline{\bar{b}c})$
$= \bar{a} + a(\bar{\bar{a}} + \bar{b} \cdot \bar{\bar{b}} + \bar{c})$
$= \bar{a} + a(a + \bar{b} \cdot b + \bar{c})$
$= \bar{a} + a(a + \bar{c})$
$= \bar{a} + a \cdot a + a \cdot \bar{c}$
$= \bar{a} + a + a\bar{c}$
$= a \cdot c = ac \rightarrow$ SALAH, Seharusya AC

2) $a\bar{b} + \bar{b}\bar{c} + \bar{a}\bar{c} = a\bar{b} + \bar{a}\bar{c}$

Pembuktian :

Peta - K →

	$\bar{c}$	c	⇒ Hasil
$\bar{A}\bar{B}$	1	0	⇒ $a\bar{b} + \bar{a}\bar{c}$
$\bar{A}B$	1	0	
$A\bar{B}$	0	0	⇒ Sebenarnya Udah paling sederhana untuk Soalnya Cuma dapat diubah seperti itu
AB	1	1	

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3)

A	B	C	D	X	
0	0	0	0	0	
0	0	0	1	0	
0	0	1	0	0	
0	0	1	1	0	
0	1	0	0	0	
0	1	0	1	1	→ $\bar{A}B\bar{C}D$
0	1	1	0	1	→ $\bar{A}BC\bar{D}$
0	1	1	1	1	→ $\bar{A}BCD$
1	0	0	0	0	
1	0	0	1	1	→ $A\bar{B}\bar{C}D$
1	0	1	0	1	→ $A\bar{B}C\bar{D}$
1	0	1	1	1	→ $A\bar{B}CD$
1	1	0	0	0	
1	1	0	1	1	→ $AB\bar{C}D$
1	1	1	0	1	→ $ABC\bar{D}$
1	1	1	1	1	→ $ABCD$

- Tidak menggunakan don't care karena menurut logika saya dan Asumsinya $(A+B).(C+D)$.
- A atau B dan C atau D

→ Peta Karnaugh

	$\bar{C}\bar{D}$	$\bar{C}D$	CD	$C\bar{D}$
$A\bar{B}$	0	0	0	0
$\bar{A}\bar{B}$	0	1 1	1	1 [2]
AB	0	1	1	1
$A\bar{B}$	0	[3] 1	1	1 [4]

- Jadi, hasilnya ⇒ $BD + BC + AD + AC$

4) $a * b = ab + \bar{a}\bar{b}$

Pembuktian :

- Misalkan $ab = X$

- $a * b = ab + \bar{a}\bar{b}$
  $= X + \bar{X}$
  $= 1$

- karena $a * b = 1$, maka $C = a * b = 1$

- Jadi, persyaratan
  - $a * bc = 1$
  - $a * b(a * b) \rightarrow C = (a * b) = 1$
  - $1 . 1 = 1$ → BENAR
  -

OKTEY