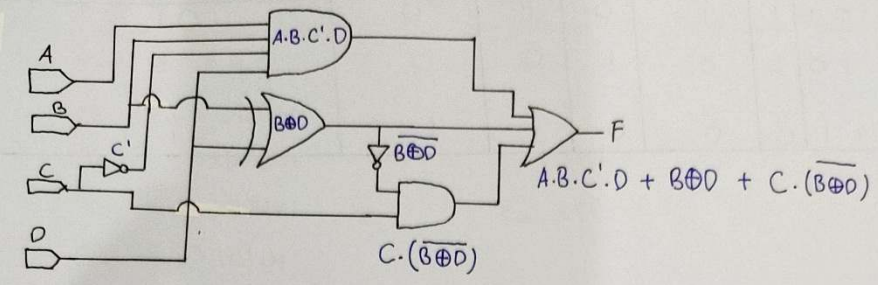
32200091_Andrew Virya Victorio

UTS SISTEM DIGITAL SEMESTER 1

Sistem Digital Semester 1

3220009 1 – Andrew Virya Victorio



Jawab

① Persamaan Logika dari Gerbang Logika diatas adalah

$F = A.B.C'.D + B \oplus D + C.(\overline{B \oplus D})$

② *Tabel kebenaran

A	B	C	D	C'	A.B.C'.D	B⊕D	$\overline{B \oplus D}$	$C.(\overline{B \oplus D})$	$A.B.C'.D + B \oplus D + C.\overline{B \oplus D}$
0	0	0	0	1	0	0	1	0	0
0	0	0	1	1	0	1	0	0	1
0	0	1	0	0	0	0	1	1	1
0	0	1	1	0	0	1	0	0	1
0	1	0	0	1	0	1	0	0	1
0	1	0	1	1	0	0	1	0	0
← 0	1	1	0	0	0	1	0	0	1
0	1	1	1	0	0	0	1	1	1
1	0	0	0	1	0	0	1	0	0
1	0	0	1	1	0	1	0	0	1
1	0	1	0	0	0	0	1	1	1
1	0	1	1	0	0	1	0	0	1
1	1	0	0	1	0	1	0	0	1

Cth data Soal $6_{(10)} = 0110_{(2)}$

(Lanjutan)

(Lanjutan ...) Nomor 2

A	B	C	D	C'	A.B.C'.D	B⊕D	$\overline{B \oplus D}$	C.($\overline{B \oplus D}$)	A.B.C'.D + B⊕D + C.($\overline{B \oplus D}$)
1	1	0	1	1	1	0	1	0	1
1	1	1	0	0	0	1	0	0	1
1	1	1	1	0	0	0	1	1	1

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T_7 . . . . . T_0

③ Input 8 set bilangan desimal → $4_{(10)}$; $5_{(10)}$; $8_{(10)}$; $15_{(10)}$; $12_{(10)}$; $15_{(10)}$; $8_{(10)}$; $0_{(10)}$ ke dalam Port A, B, C, D

$T_7 : 4_{(10)} = 0100_{(2)}$
$T_6 : 5_{(10)} = 0101_{(2)}$
$T_5 : 8_{(10)} = 1000_{(2)}$
$T_4 : 15_{(10)} = 1111_{(2)}$
$T_3 : 12_{(10)} = 1100_{(2)}$
$T_2 : 15_{(10)} = 1111_{(2)}$
$T_1 : 8_{(10)} = 1000_{(2)}$
$T_0 : 0_{(10)} = 0000_{(2)}$

F_7 = MSB = .. ?
F_0 = LSB = .. ?

A	B	C	D	C'	A.B.C'.D	B⊕D	$\overline{B \oplus D}$	$C.\overline{(B \oplus D)}$	$A.B.C'.D + B \oplus D + C.\overline{(B \oplus D)}$
0	1	0	0	1	0	1	0	0	1 → T_7
0	1	0	1	1	0	0	1	0	0 → T_6
1	0	0	0	1	0	0	1	0	0 → T_5
1	1	1	1	0	0	0	1	1	1 → T_4
1	1	0	0	1	0	1	0	0	1 → T_3
1	1	1	1	0	0	0	1	1	1 → T_2
1	0	0	0	1	0	0	1	0	0 → T_1
0	0	0	0	1	0	0	1	0	0 → T_0

$F_7 : 1_{(2)}$
$F_6 : 0_{(2)}$
$F_5 : 0_{(2)}$
$F_4 : 1_{(2)}$
$F_3 : 1_{(2)}$
$F_2 : 1_{(2)}$
$F_1 : 0_{(2)}$
$F_0 : 0_{(2)}$

F_7 = MSB = $1_{(2)}$

F_0 = LSB = $0_{(2)}$

(4.) Output : $10011100_{(2)}$

Oktal : $234_{(8)}$

Hexadesimal : $9C_{(16)}$

Desimal : $156_{(10)}$

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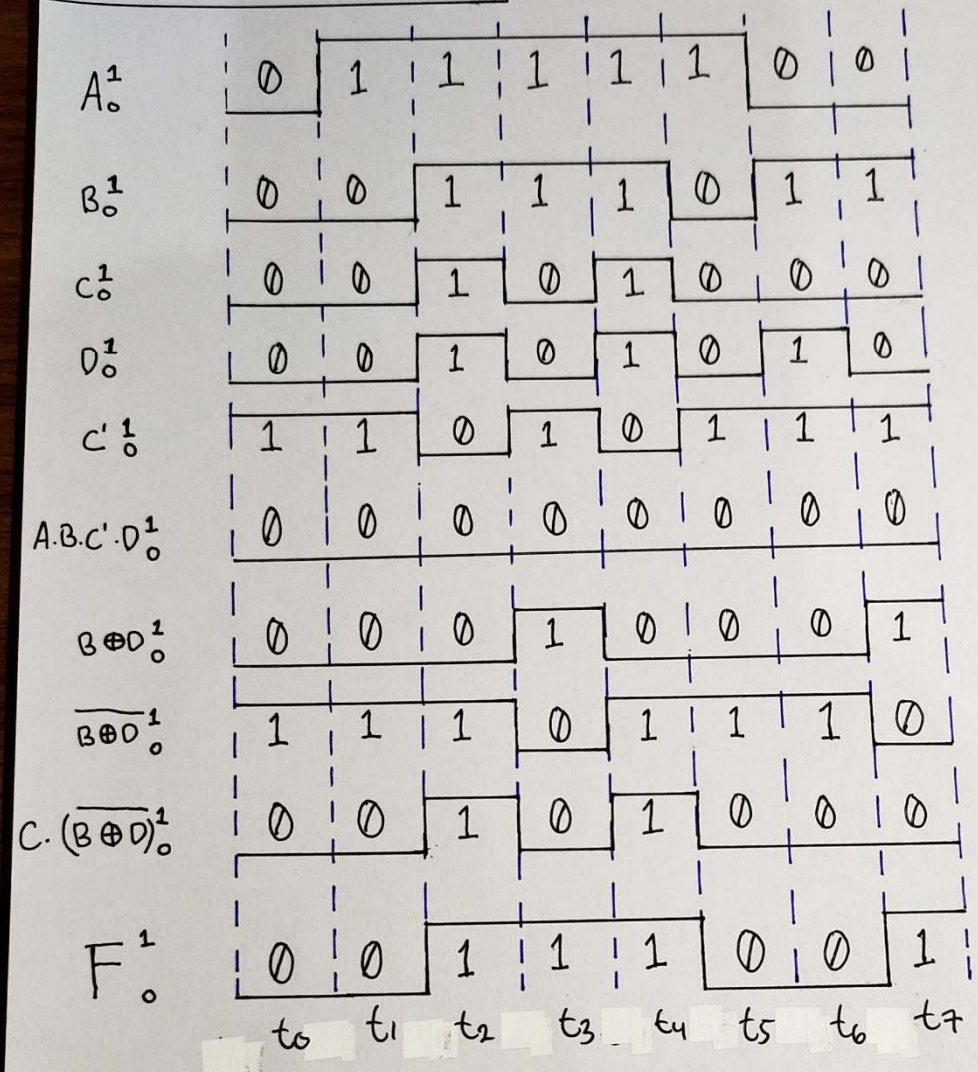
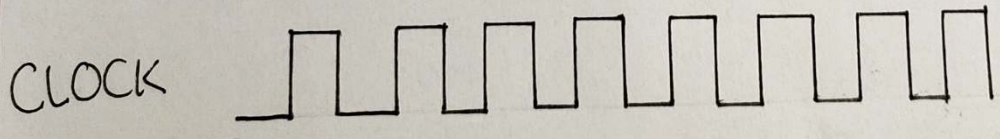
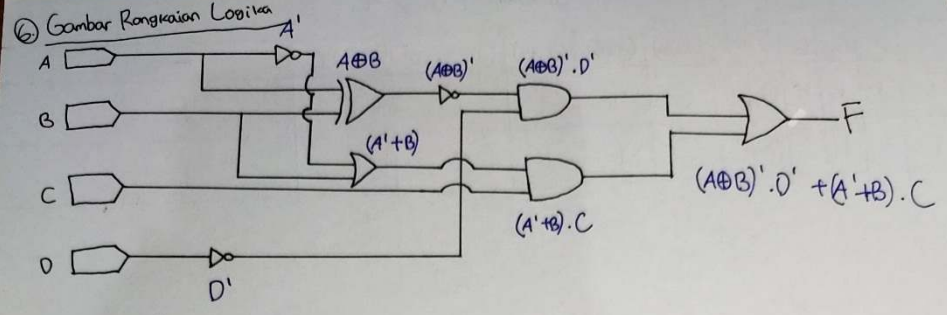
(5.)





⑥ Gambar Rangkaian Logika



⑦ *Tabel Kebenaran

F → OR Operator

A	B	C	D	A'	D'	(A⊕B)	(A⊕B)'	(A'+B)	(A⊕B)'.D'	(A'+B).C	F
0	0	0	0	1	1	0	1	1	1	0	1
0	0	0	1	1	0	0	1	1	0	0	0
0	0	1	0	1	1	0	1	1	1	1	1
0	0	1	1	1	0	0	1	1	0	1	1
0	1	0	0	1	1	1	0	1	0	0	0
0	1	0	1	1	0	1	0	1	0	0	0
0	1	1	0	1	1	1	0	1	0	1	1
0	1	1	1	1	0	1	0	1	0	1	1
1	0	0	0	0	1	1	0	0	0	0	0
1	0	0	1	0	0	1	0	0	0	0	0
1	0	1	0	0	1	1	0	0	0	0	0
1	0	1	1	0	0	1	0	0	0	0	0
1	1	0	0	0	1	0	1	1	1	0	1
1	1	0	1	0	0	0	1	1	0	0	0

(Lanjutan...) Nomor 7

A	B	C	D	A'	D'	$(A \oplus B)$	$(A \oplus B)'$	$(A' + B)$	$(A \oplus B)' \cdot D'$	$(A' + B) \cdot C$	F
1	1	1	0	0	1	0	1	1	1	1	1
1	1	1	1	0	0	0	1	1	0	1	1

⑧. Input 8 set bilangan desimal dari NIM masing-masing

$T_7 : 3_{(10)} = 0011_{(2)}$

$T_6 : 2_{(10)} = 0010_{(2)}$

$T_5 : 2_{(10)} = 0010_{(2)}$

$T_4 : 0_{(10)} = 0000_{(2)}$

$T_3 : 0_{(10)} = 0000_{(2)}$

$T_2 : 0_{(10)} = 0000_{(2)}$

$T_1 : 9_{(10)} = 1001_{(2)}$

$T_0 : 1_{(10)} = 0001_{(2)}$

F_7 = MSB

F_0 = LSB

F → OR Operator

A	B	C	D	A'	D'	(A⊕B)	(A⊕B)'	(A'+B)	(A⊕B)'.D'	(A'+B).C	F
0	0	1	1	1	0	0	1	1	0	1	1 → T_7
0	0	1	0	1	1	0	1	1	1	1	1 → T_6
0	0	1	0	1	1	0	1	1	1	1	1 → T_5
0	0	0	0	1	1	0	1	1	1	0	1 → T_4
0	0	0	0	1	1	0	1	1	1	0	1 → T_3
0	0	0	0	1	1	0	1	1	1	0	1 → T_2
1	0	0	1	0	0	1	0	0	0	0	0 → T_1
0	0	0	1	1	0	0	1	1	0	0	0 → T_0

⑨. Hasil Output F → Biner : $11111100_{(2)}$

Hexadesimal : $FC_{(16)}$

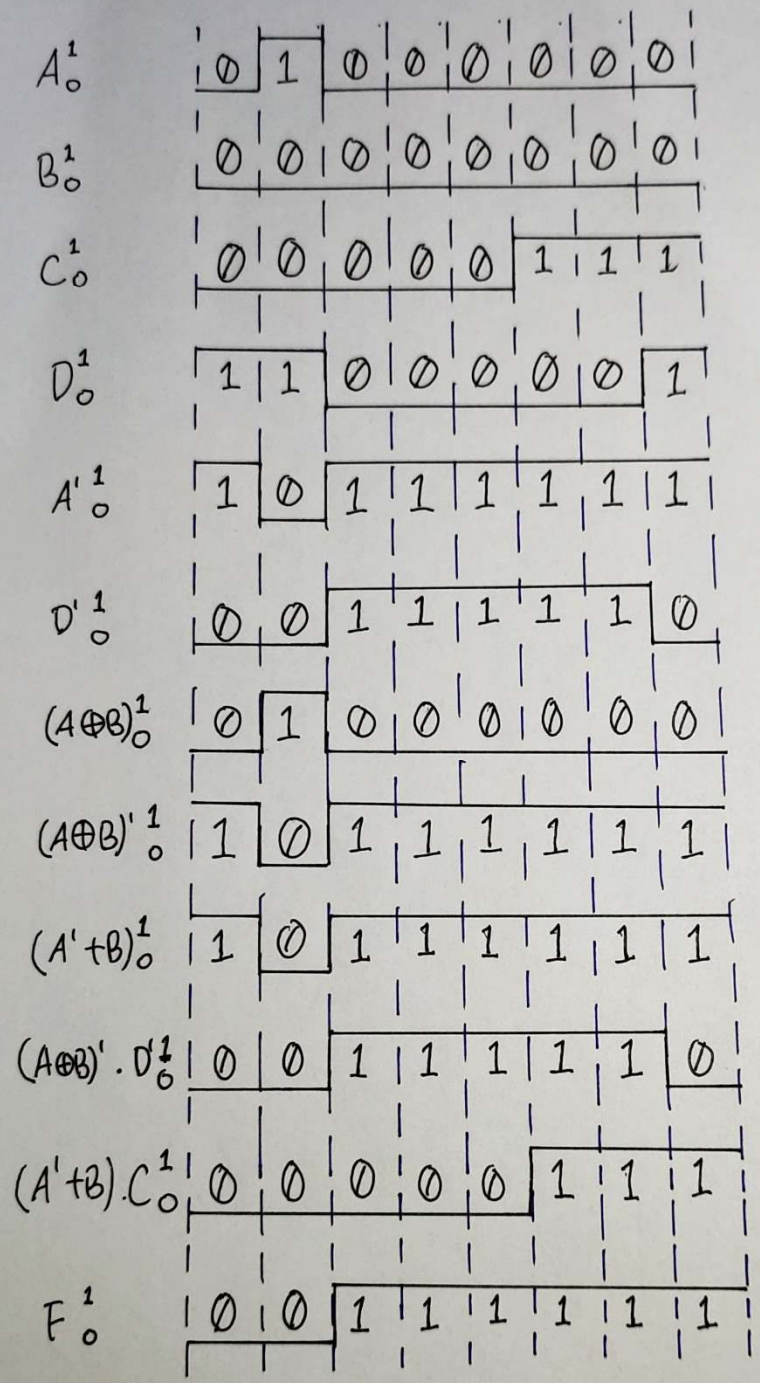
Oktal : $374_{(8)}$

Desimal : $252_{(10)}$

$F_7 = MSB = 1_{(2)}$

$F_0 = LSB = 0_{(2)}$

(10) Timing Diagram & Clock



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