

Take Home Exam

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Q.1 ⇒ i) $F = a.c + c'.d' + bcd$

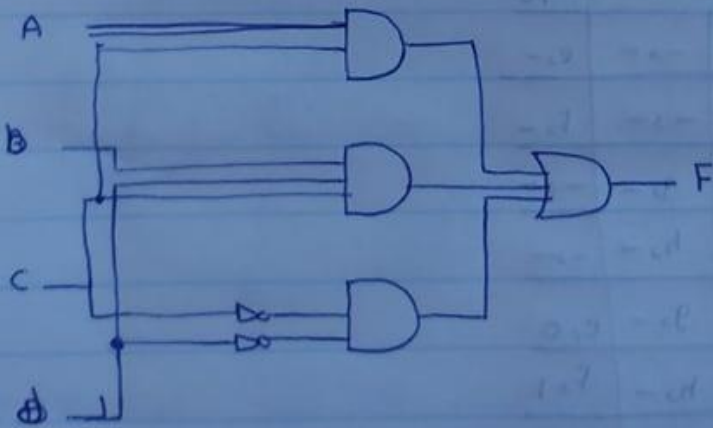
⇒ hazard ⇒

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

→ a b c d

1	0	1	1	0
1	0	1	0	0
1	0	0	0	0

→ ii) $F = a.c + c'.d' + bcd + (a.d')$ ⇒ hazard
 $= c'.d' + bcd + ac$



Q.2)

M	C	Q	stable	Comments
0	0	0	✓	After d, e
0	0	1	✓	After f, c
0	1	0	✓	After a, g
0	1	1	✓	After b, h
1	0	0	✓	After a, g
1	0	1	✓	After b, g, h
1	1	0	✓	After c, e
1	1	1	✓	After d, f

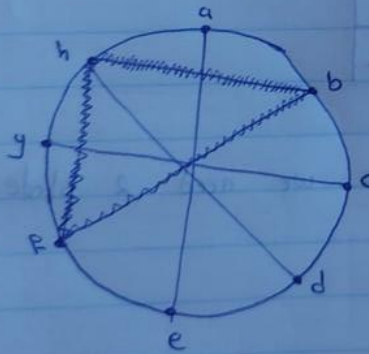
* Primitive flow table:

	00	01	11	10
a	a, 0	c, -	-> -	e, -
b	b, 1	d, -	-> -	f, -
c	b, -	c, 0	g, -	-> -
d	a, -	d, 1	h, -	-> -
e	a, -	-> -	g, -	e, 0
f	b, -	-> -	h, -	f, 1
g	-> -	c, -	g, 0	f, -
h	-> -	d, -	h, 1	f, -

* Implication chart *

b	X						
c	X	X					
d	X	X	X				
e	✓	X	X	X			
f	X	✓	X	X	X		
g	X	X	✓	X	X	X	
h	X	✓	X	✓	X	✓	X
	a	b	c	d	e	f	g

- ⊛ Compatible pairs $\Rightarrow (a,e), (b,h), (b,f), (c,g), (d,h), (f,h)$
- ⊛ Maximal Compatibles + (merger diagram)



- \Rightarrow 1) (b, f, h)
- 2) (c, g)
- 3) (d, h)
- 4) (a, e)

- ⊛ Minimum set of maximal compatibles $(b, f, h), (a, e), (c, g), (d)$

		00	01	11	10
bFh	ae	b,1	d,-	h,1	F,1
ae	et	a,0	G,-	g,-	e,0
d	tt	a,-	d,1	h,-	-,-
cg	to	b,-	c,0	g,0	F,-

		00	01	11	10
A		A,1	D,-	A,1	A,1
B		B,0	D,-	D,-	B,0
C		B,-	C,1	A,-	-,-
D		A,-	D,0	D,0	A,-

we have 4 state so we need 2 state

- * state assign A = 00
- B = 01
- C = 11
- D = 10

		MC			
$y_1 y_2$		00	01	11	10
00	0	0	1	0	0
01	0	0	1	1	0
11	0	0	1	0	X
10	0	0	1	1	0

$$Y_1 = M'C + y_1' y_2 C + y_1 y_2' C$$

		MC			
$y_1 y_2$		00	01	11	10
00	0	0	0	0	0
01	0	1	0	0	1
11	0	1	1	0	X
10	0	0	0	0	0

$$Y_2 = y_1 y_2' C' + y_1 y_2 M'$$

		MC			
$y_1 y_2$		00	01	11	10
00	0	1	1	1	1
01	0	0	1	1	0
11	X	0	1	X	X
10	X	0	0	0	X

$$Y_3 = y_1' y_2' + y_1' C + y_2 M' C$$

