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ID: 15478

SUBJECT: DIGITAL LOGIC DESIGN

SEMESTER: 3RD

PROGRAMME: BS (SOFTWARE ENGINEERING)

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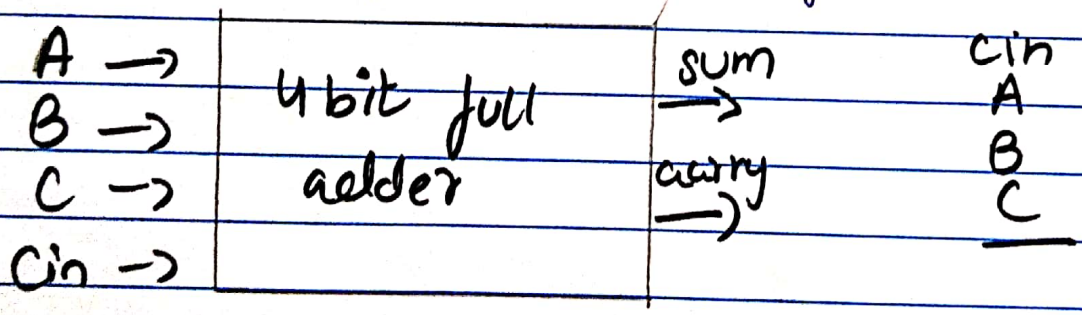
Q1) Draw and explain logic ----?

a) A circuit for adding or sb----:

1) Full adder:

The full adder is logical circuit that perform an addition operation on three binary digits and are just an half adder it also generate carry



b) 4 bit full subtractor

The 4 bit full subtractor is logical circuit, that perform subtractrondl operation on three binary digits and just like an half subtractor it also generate borrow in many ways full subtractor can be used as

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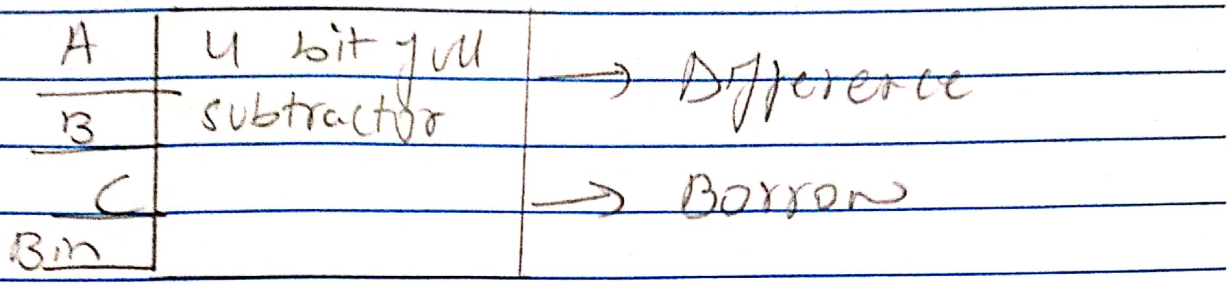
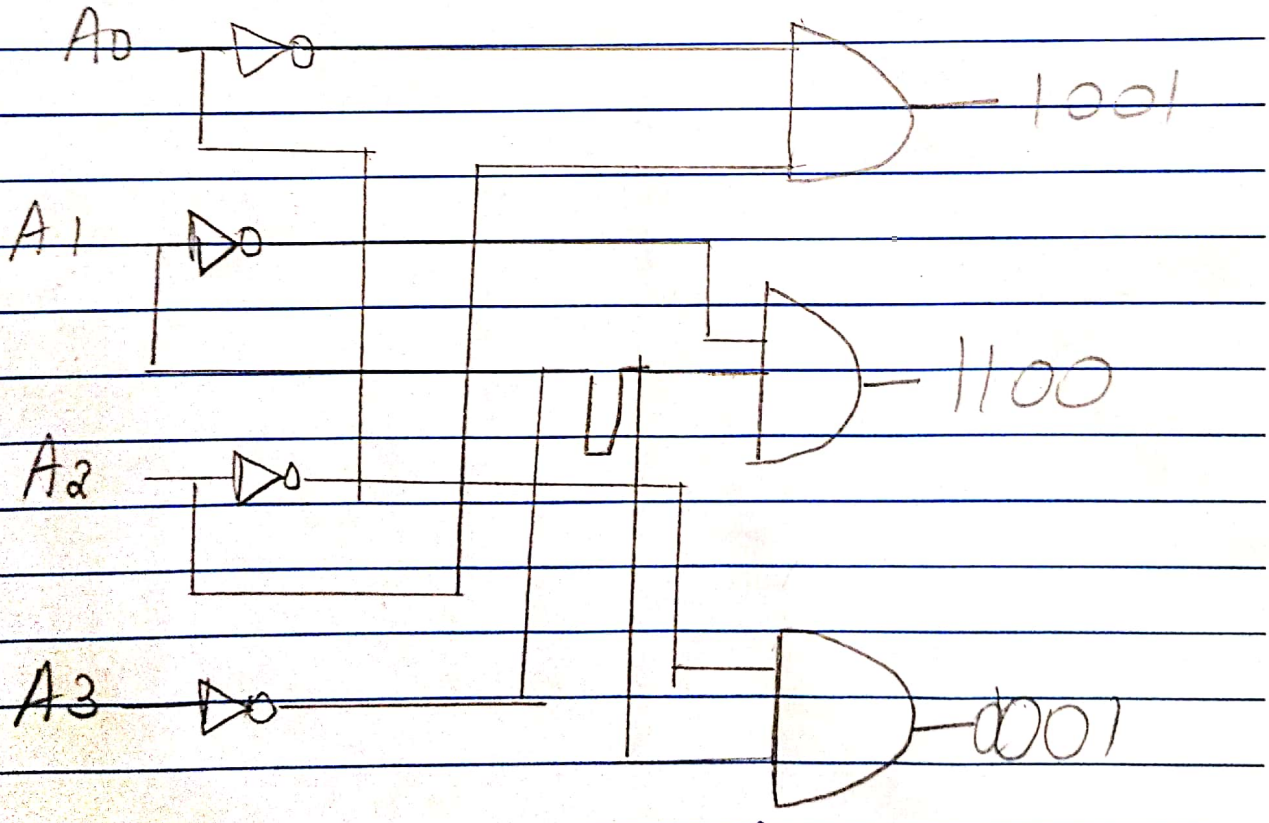
half subtractor connected together.



b 4 bit active low decodes:



Here we used 4, 6 8 input signal

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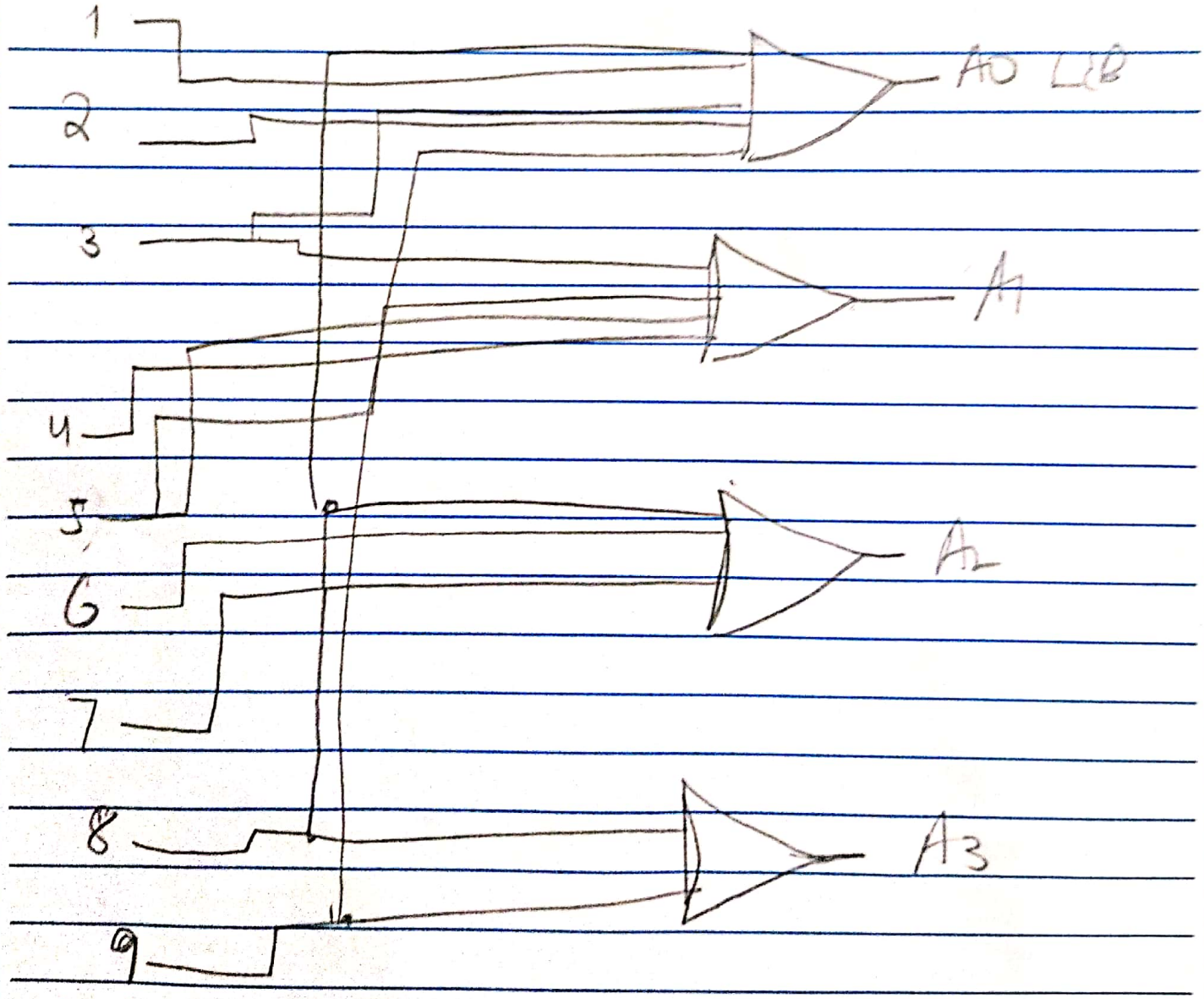
and it detect the value 1001
The active low decoder means that output is active it has logic value. which is low

c) Decimal to BCD encoder:



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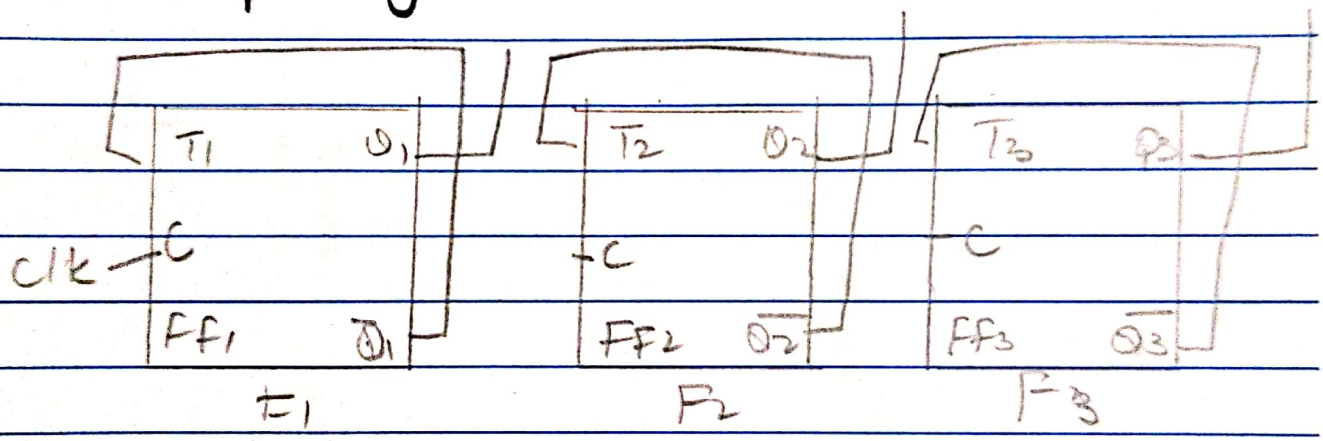
A decimal to BCD encoder is also known as 10 line to 4 line encoder it accepts 10 input and product 4 bit output corresponding to activated decimal input.

d) Frequency divide ----?



Here we assume the frequency is 16 KHz

so f/2, f = 16/2

f = 8KHz

Q2) For 4 input ----?

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a) $S0 = 1$

$S = 1$	
S_1 0	
D_0 0	
D_1 1	$D0 = 1$
D_2 0	
D_3 1	

$S0 \cdot S1 = 10$ D0

b) $S0 = 0$, $S1 = 1$

$S0 = 0$	
$S1 = 1$	
D0 0	
D1 1	D1
D2 0	$S0 \cdot S1 = D1$
D3 1	0.1

c) $S0 = 1$, $S1 = 1$

$S0 = 1$	
$S1 = 1$	
D0 —	D1 x
D1 —	$S0 = S1 = D1$
D2 —	1.0 APM
D3 —	

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d) $S_0 = 0, \quad S_1 = 0$

$I_0 = 0$		
$S_1 = 0$		
$D_0 = 0$		
$D_1 = 1$		D_3
$D_2 = 0$		$\rightarrow Y \quad S_0 S_1 = D_3$
$D_3 = 1$		$1 \cdot 1$

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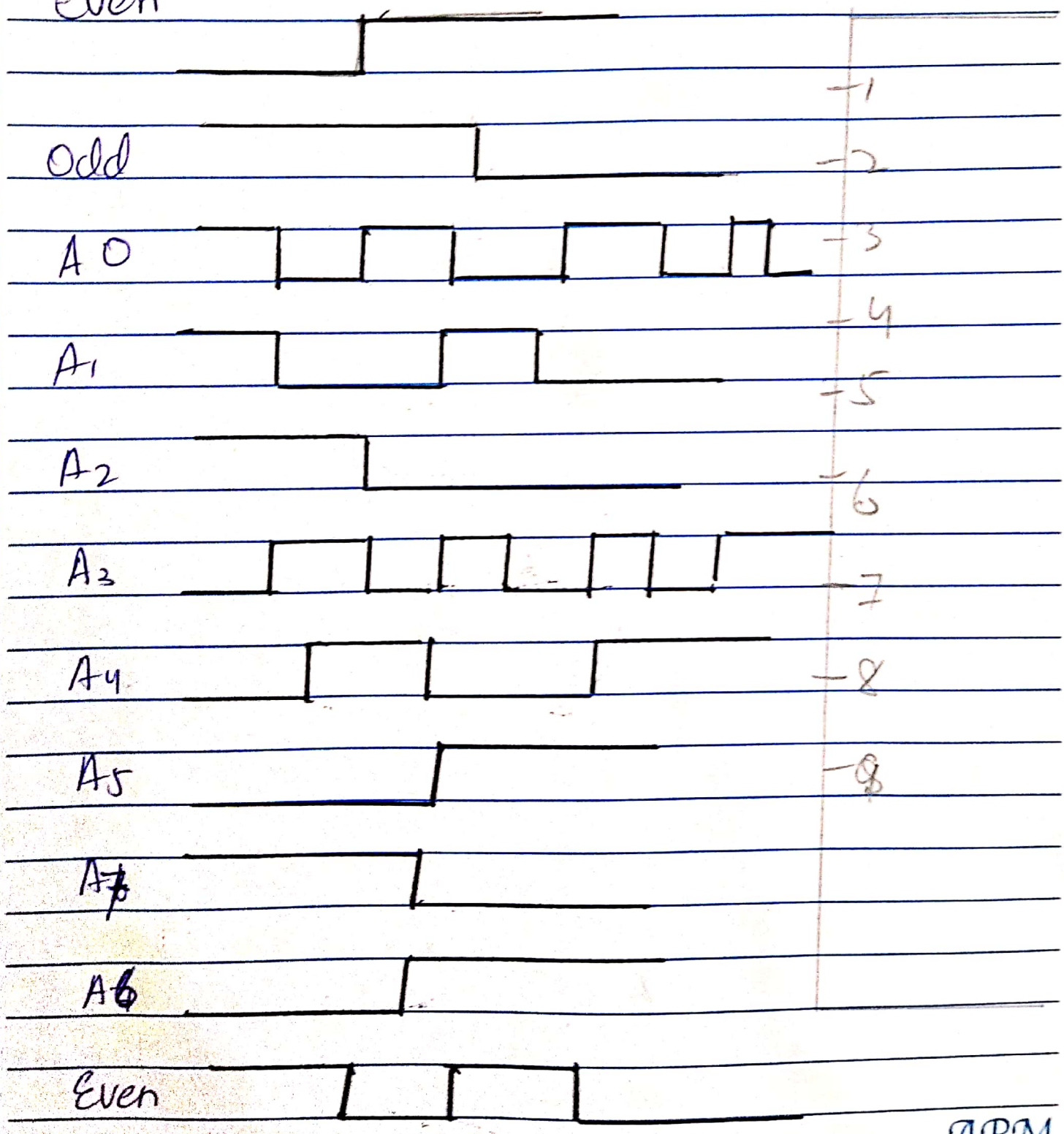
Q3 Timing diagram ------?



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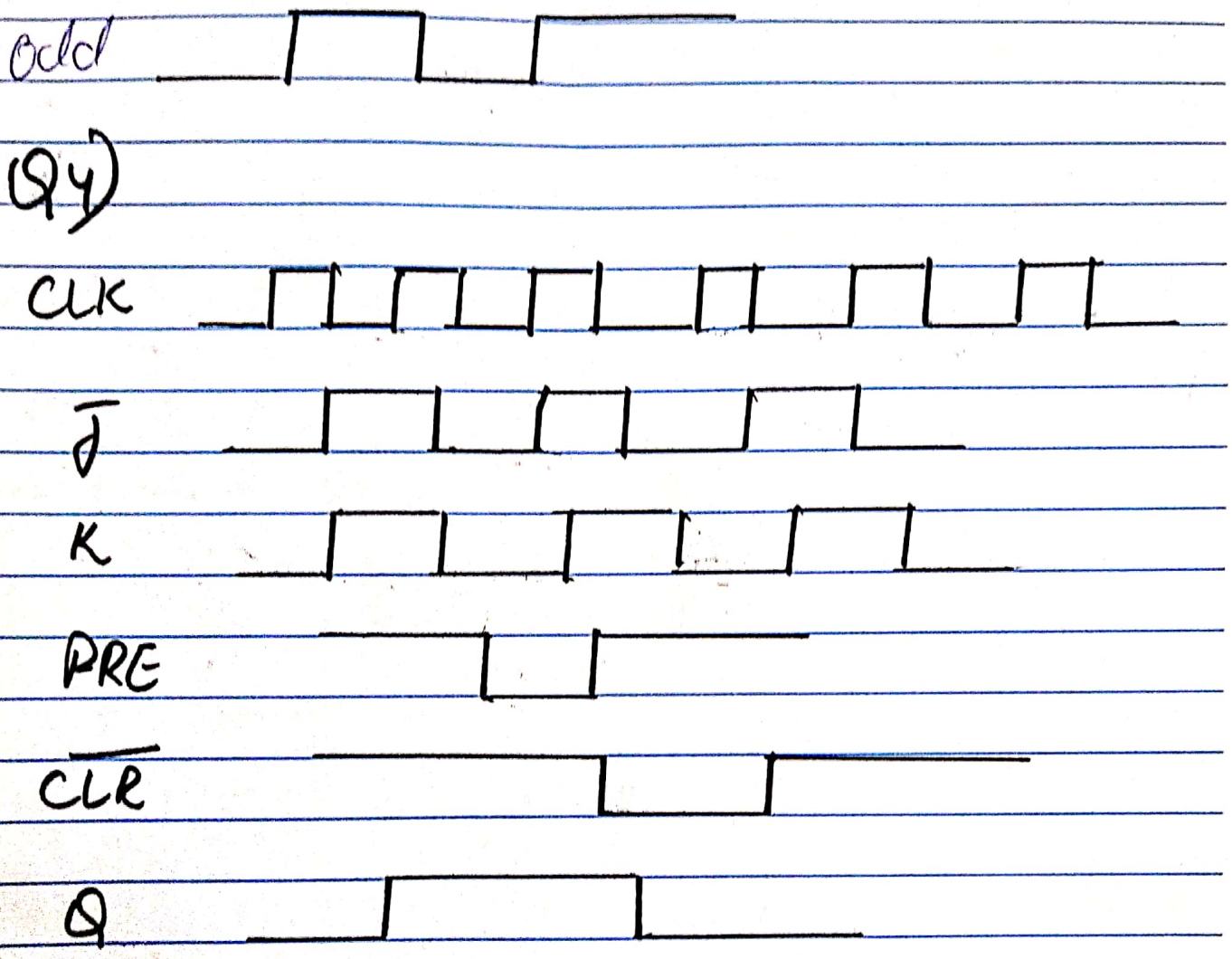

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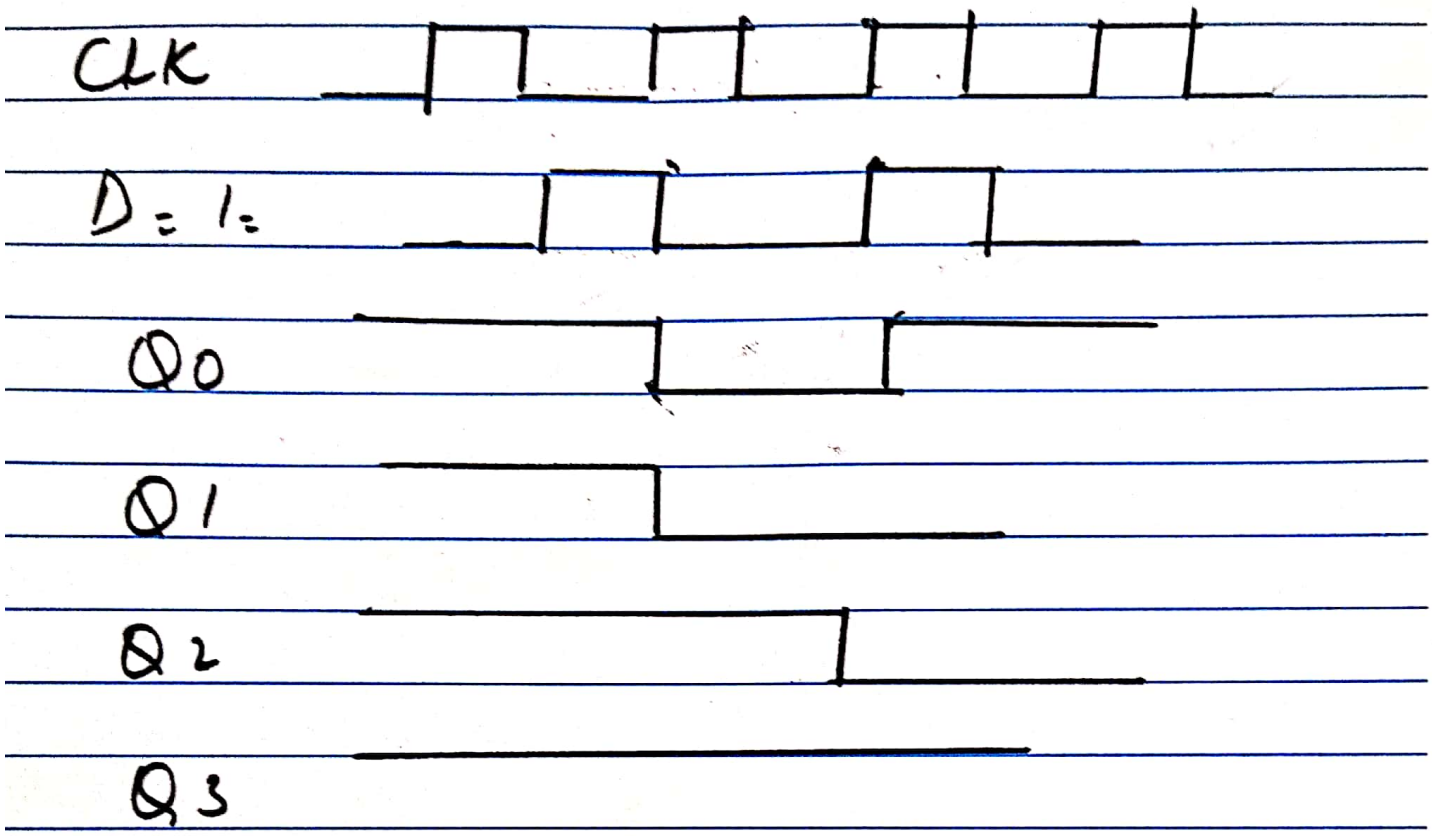

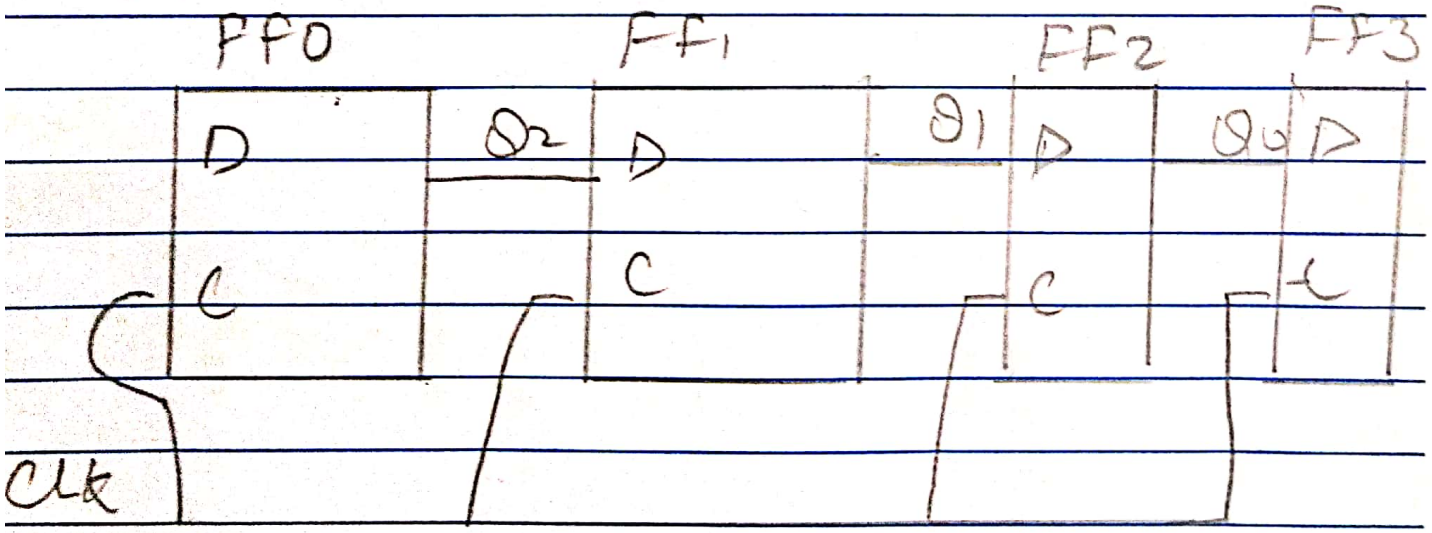

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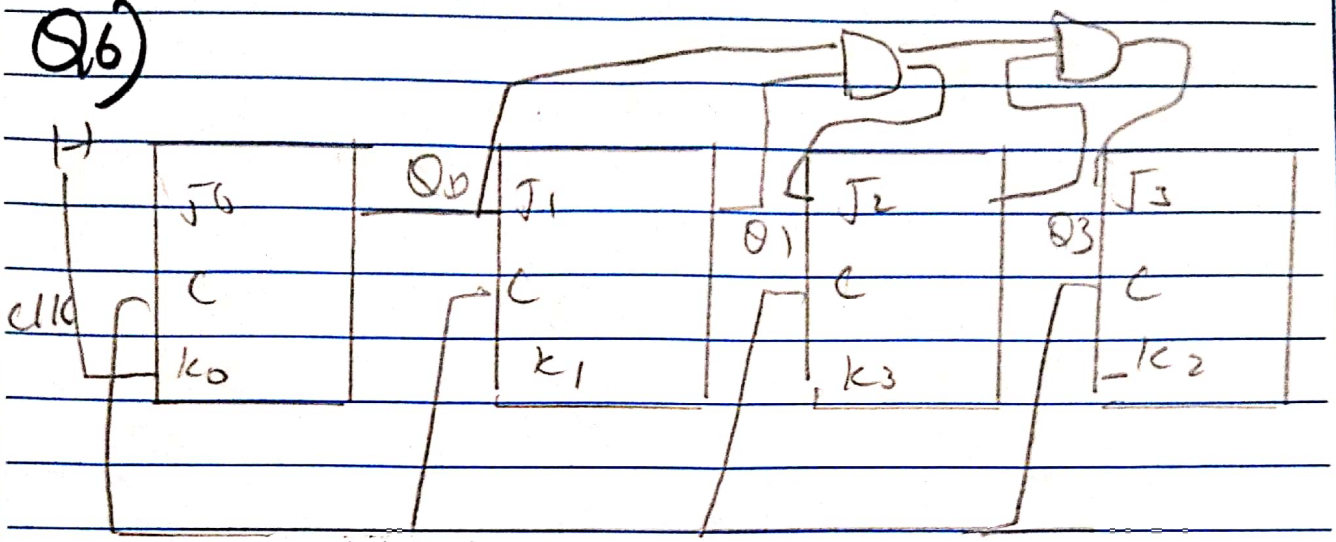
Q6)



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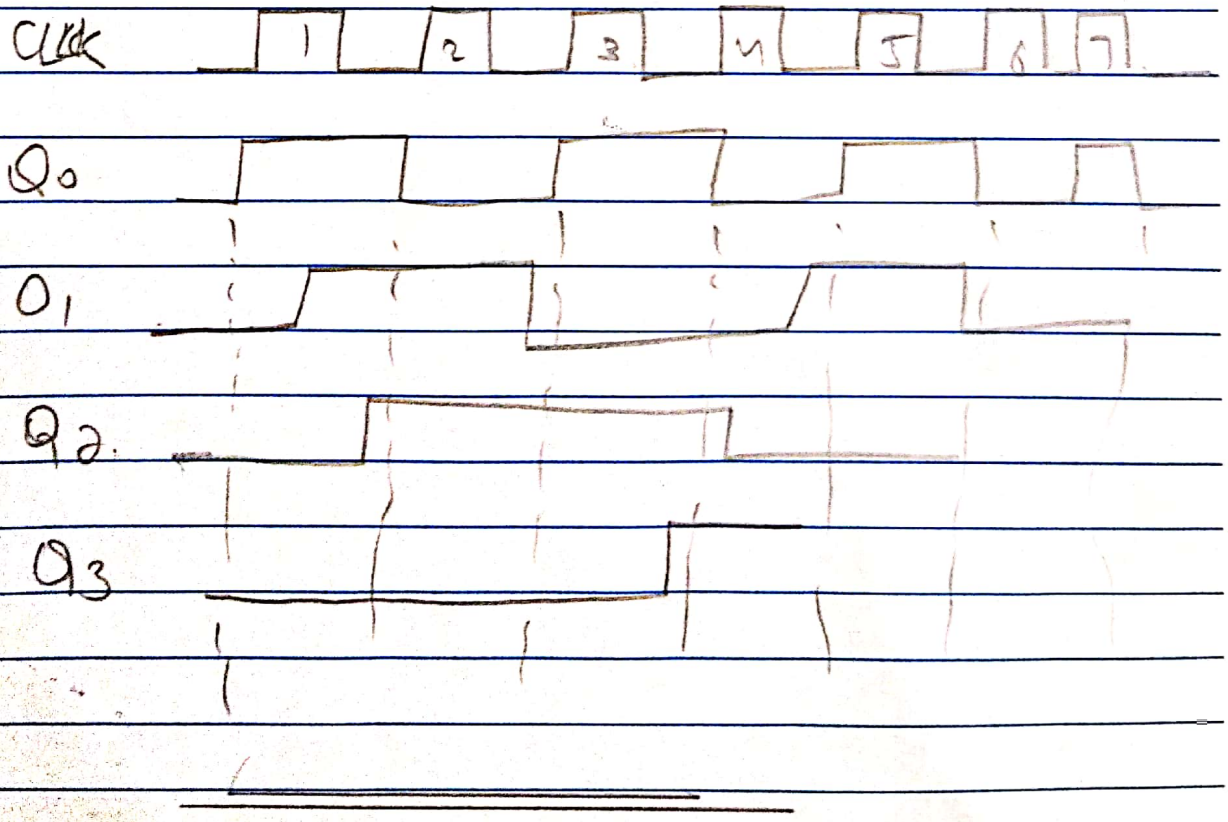

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