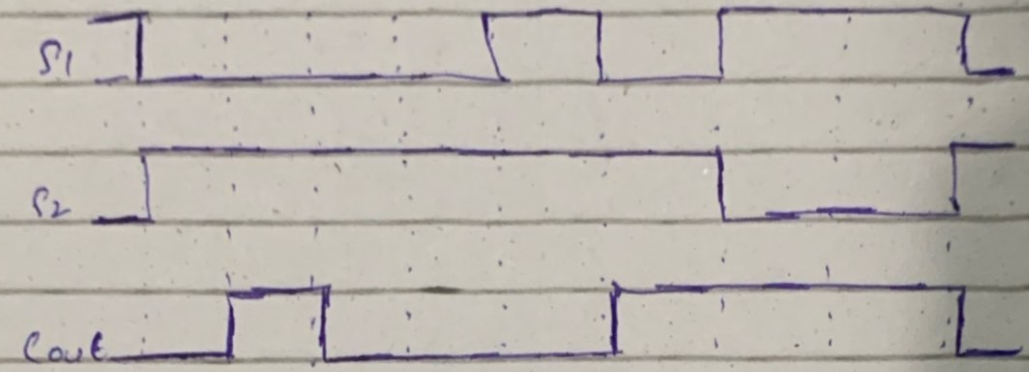
Roll No: 0021

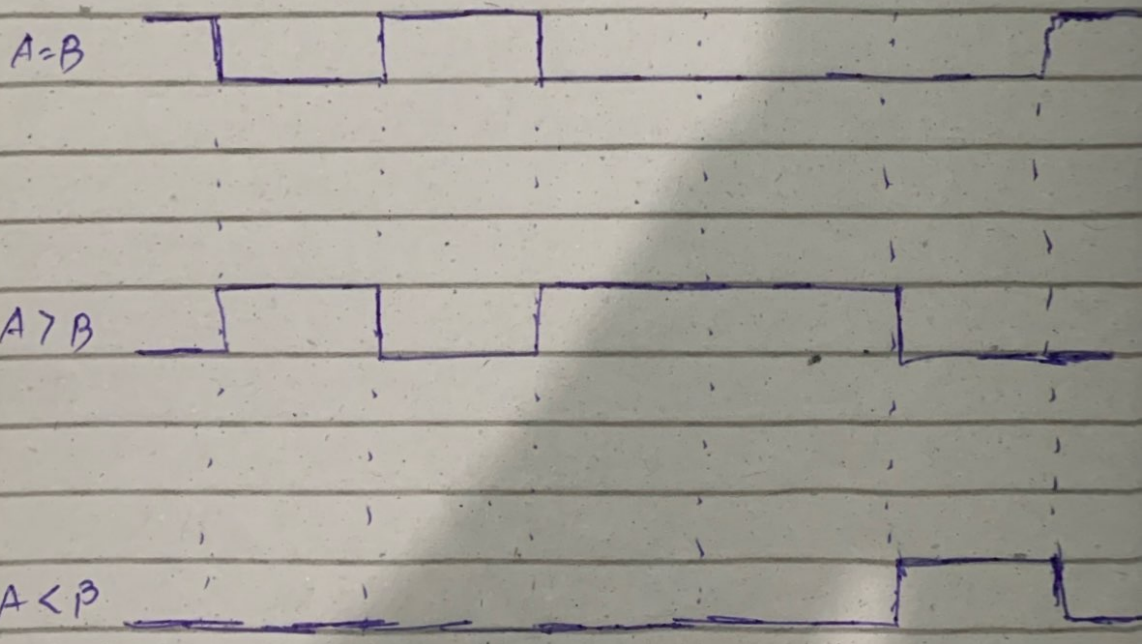
Name: Harsh Kumar

Date

Question 1



Q:2)



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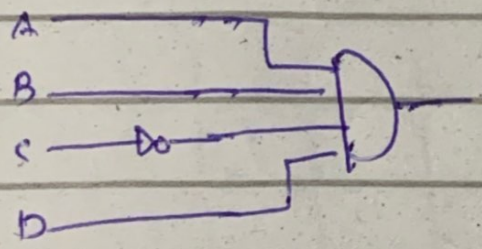
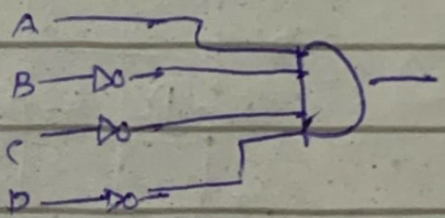
Date

Question: 03

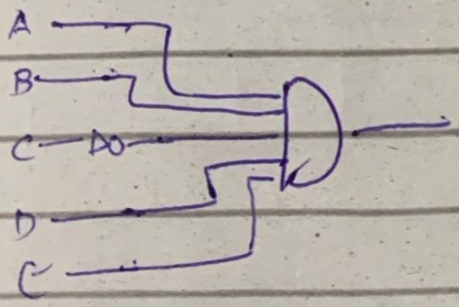
a) 1101



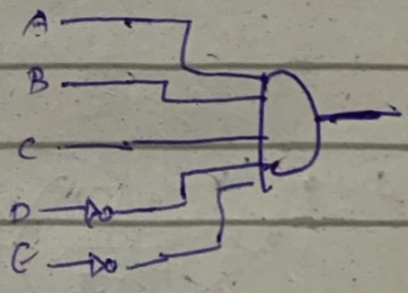
b) 1000



c) 11011

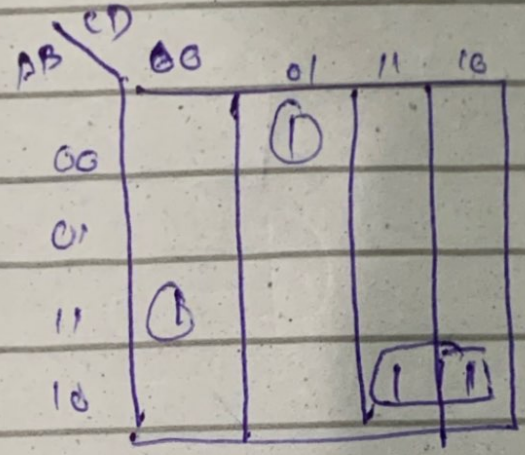


d) 11100

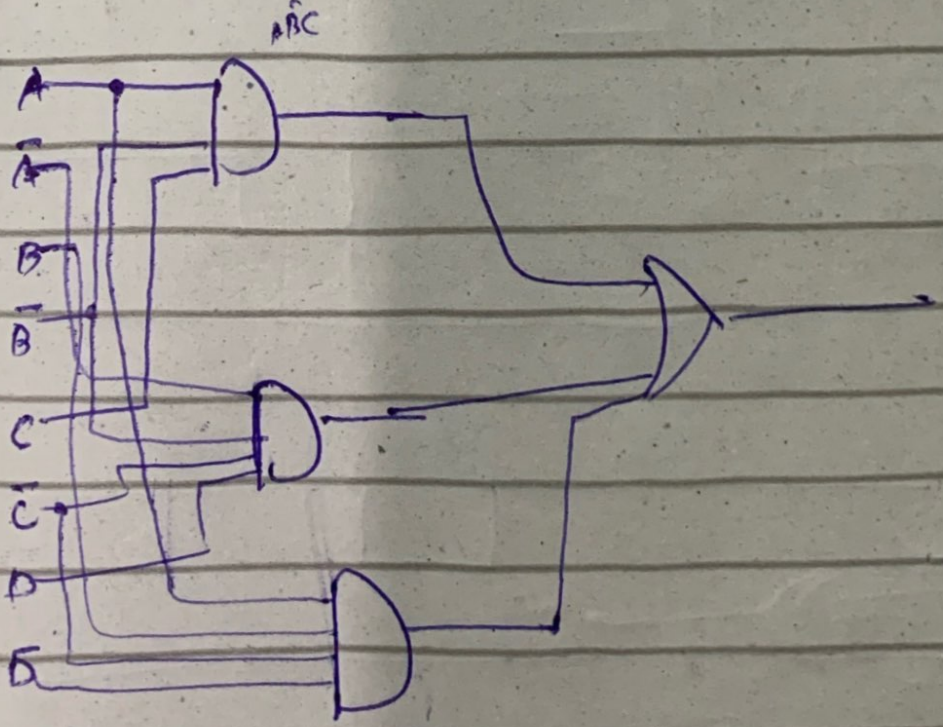


Date

Question: 04



$\bar{A}B\bar{C}D + AB\bar{C}\bar{D} + A\bar{B}C$



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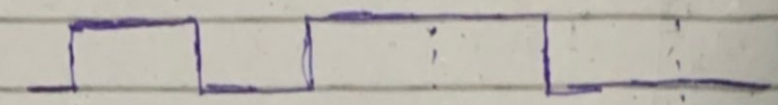
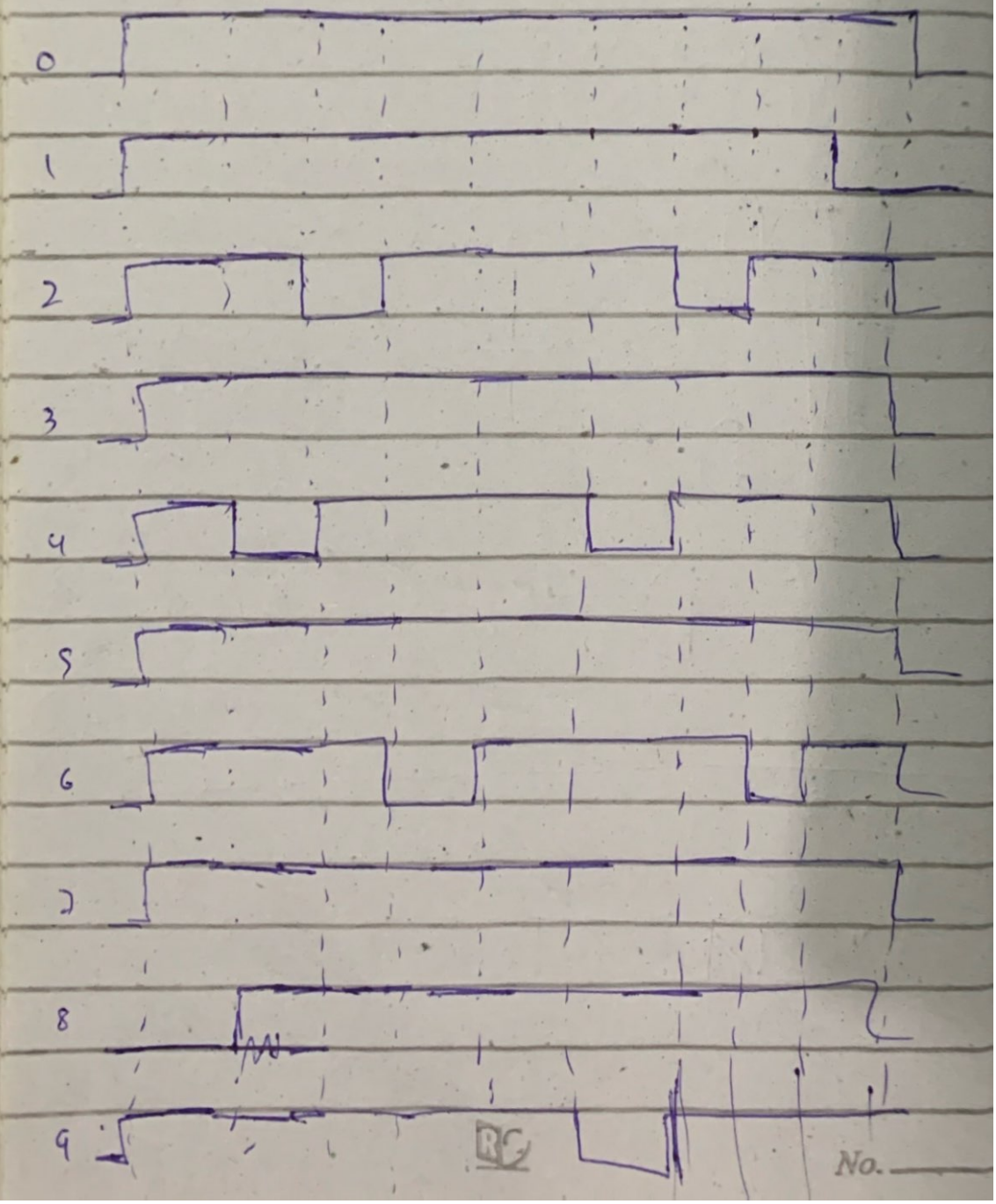
Question 5

output:



Q6) Active Low



No.

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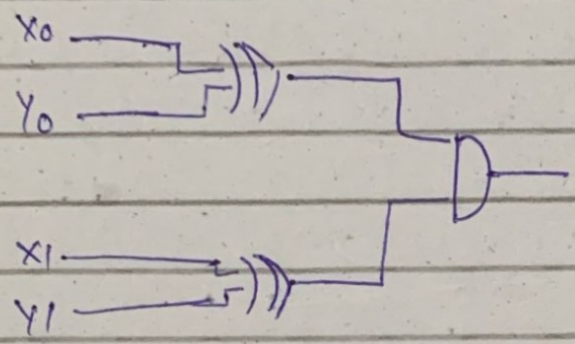
Q7)

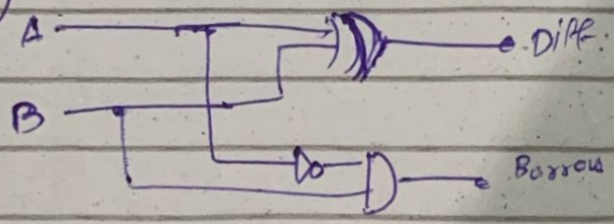
→ output is 1011 (which is 11 in decimal)

→ It is not a valid BCD code

Q8)



Q9)



$Diff = \bar{A}B + A\bar{B} = A \oplus B$

$Borrow = \bar{A}B$

RG

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Q 10)

A_2	A_1	B_2	B_1	A>B	A=B	A<B
0	0	0	0	0	1	0
0	0	0	1	0	0	1
0	0	1	0	0	0	1
0	0	1	1	0	0	1
0	1	0	0	1	0	0
0	1	0	1	0	1	0
0	1	1	0	0	0	1
0	1	1	1	0	0	1
1	0	0	0	1	0	0
1	0	0	1	1	0	0
1	0	1	0	0	1	0
1	0	1	1	0	0	1
1	1	0	0	1	0	0
1	1	0	1	1	0	0
1	1	1	0	1	0	0
1	1	1	1	0	1	0

No.

$(A \oplus B)$

$(AB + A\bar{B})$

$\bar{A}B \cdot A\bar{B}$

$(A + \bar{B}) \cdot (\bar{A} + B)$ Date

For $A = B$

$A_1A_2\,B_1B_2 + \bar{A_1}A_2\bar{B_1}B_2 + A_1\bar{A_2}\,B_1\bar{B_2} + \bar{A_1}\bar{A_2}\,\bar{B_1}\bar{B_2}$

$A_2B_2(A_1B_1 + \bar{A_1}\bar{B_1}) + \bar{A_2}\bar{B_2}(A_1B_1 + \bar{A_1}\bar{B_1})$

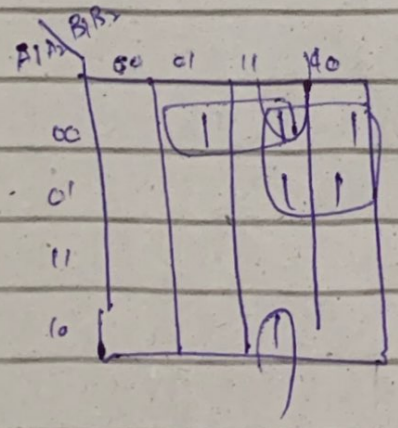
$(A_1B_1 + \bar{A_1}\bar{B_1})(A_2B_2 + \bar{A_2}\bar{B_2})$

$\therefore \overline{A \oplus B} = AB + \bar{A}\bar{B}$

~~$(A \oplus$~~

$(\overline{A_1 \oplus B_1}) \cdot (\overline{A_2 \oplus B_2})$

For $A \neq B$



$\bar{A_2}B_2 + \bar{A_2}\bar{A_1}B_1 + \bar{A_1}B_1B_2$

$A\bar{B}_2 + \bar{A_1}B_1(\bar{A_2} + B_2)$

RC

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A > B

$A_2\bar{B_2} + A_2A_1\bar{B_1} + A_1\bar{B_2}\bar{B_1}$

$A_2\bar{B_2} + A_1\bar{B_1}(A_2 + \bar{B_2})$

Date

Q11)

S_1	S_0	X
0	0	D_0
0	1	D_1
1	0	D_2
1	1	D_3

a) $S_0 = 0$ $S_1 = 1$

output $\Rightarrow D_2 = 0$

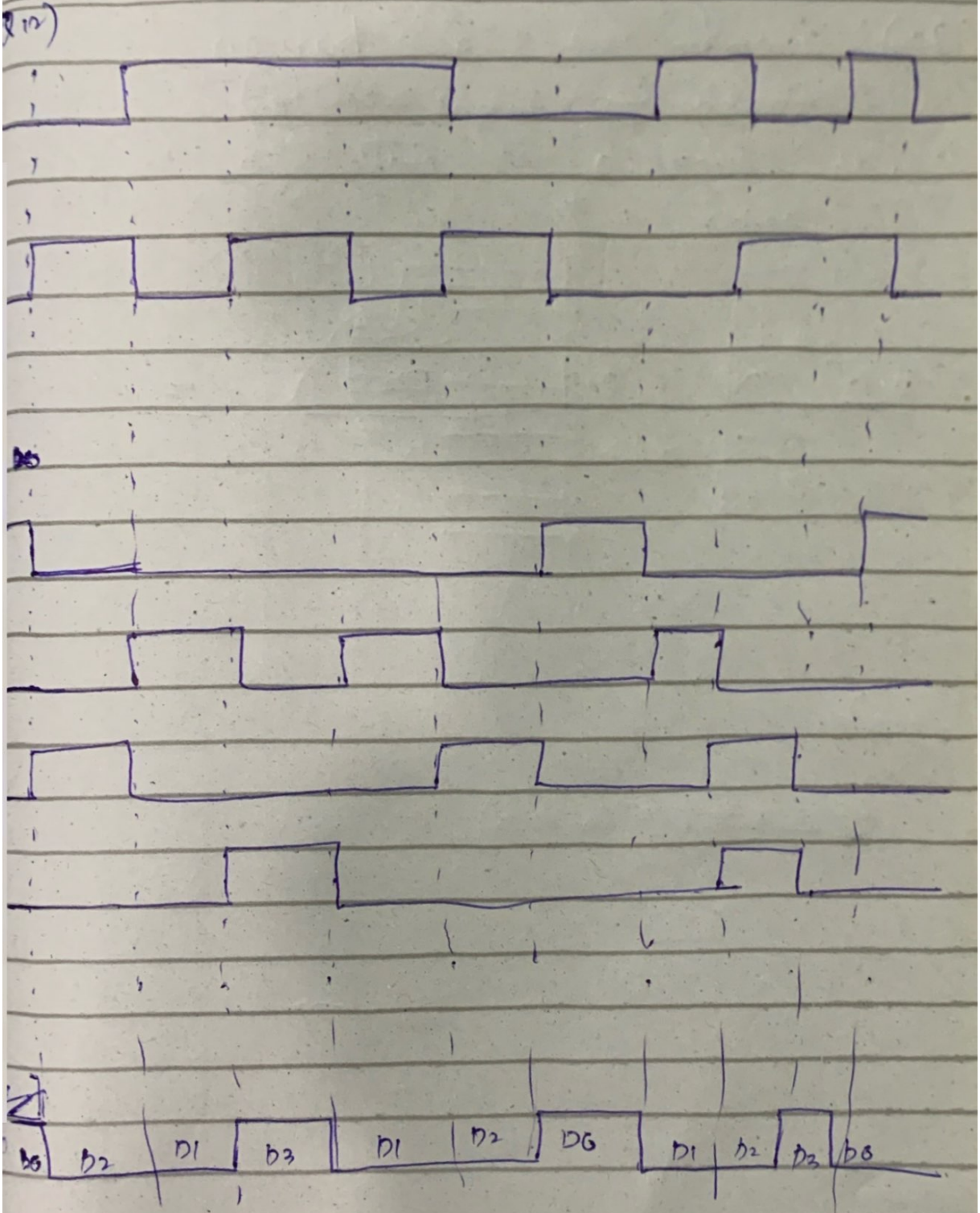
b) $S_1 = 1$ $S_0 = 1$

output $\Rightarrow D_3 = 1$

c) $S_0 = 1$ $S_1 = 0$

output $\Rightarrow D_1 = 0$

Date



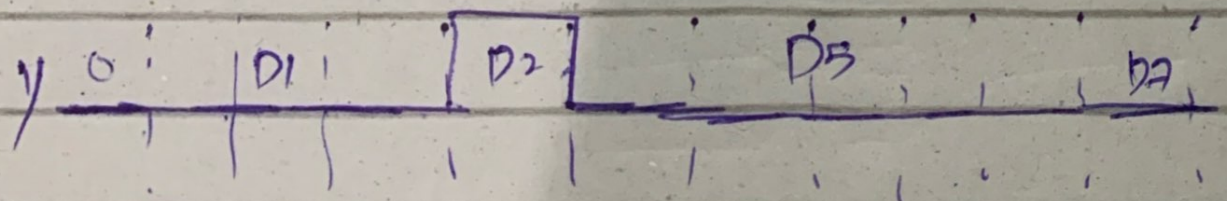
derived from problem 11

blc [illegible] Problem 3 selection bit wise

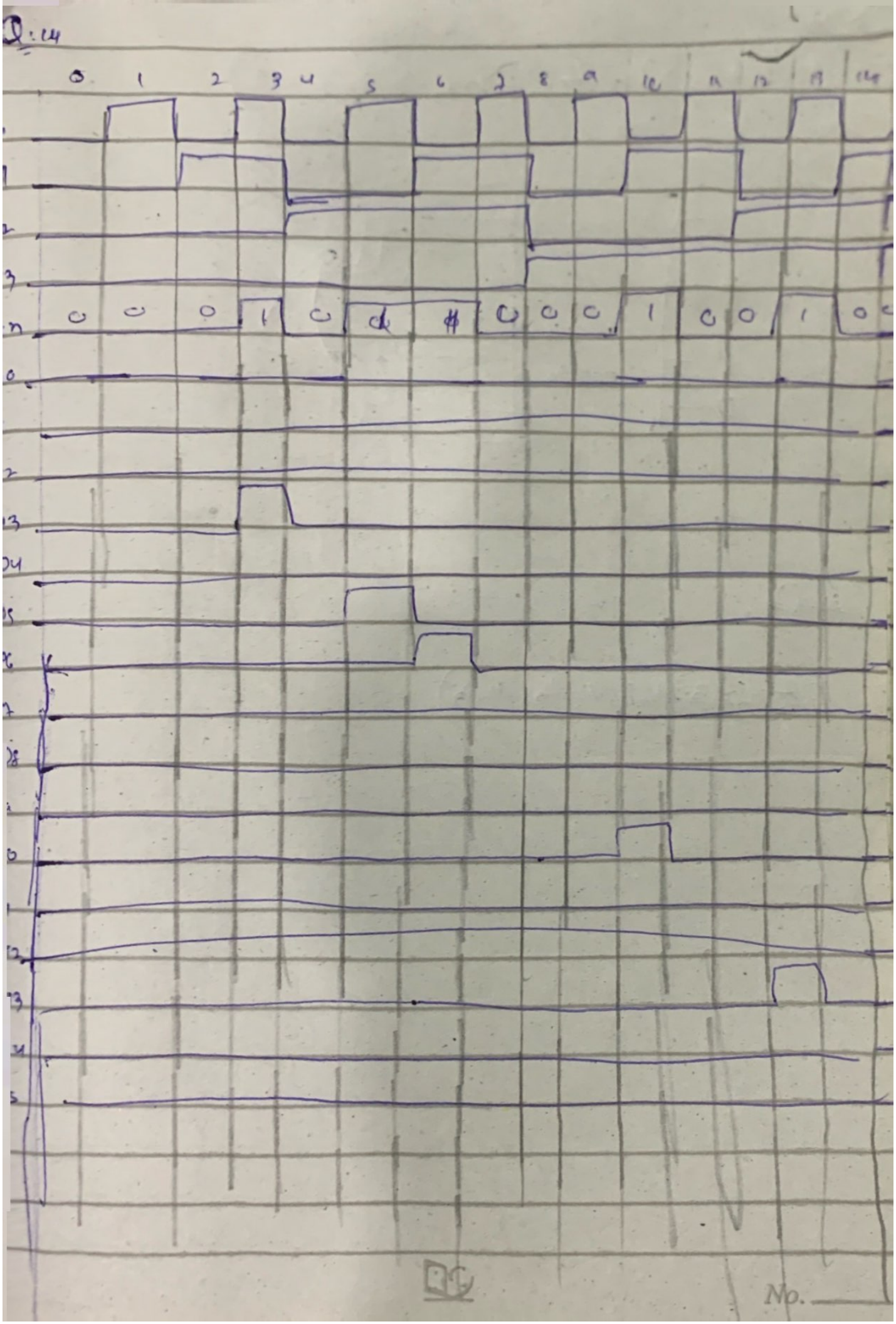
No.

Date

Q13) remember there is a bar on Enable → means if enable is 1 then output : 0 if enable is 0 then output is Y.



Q: 14

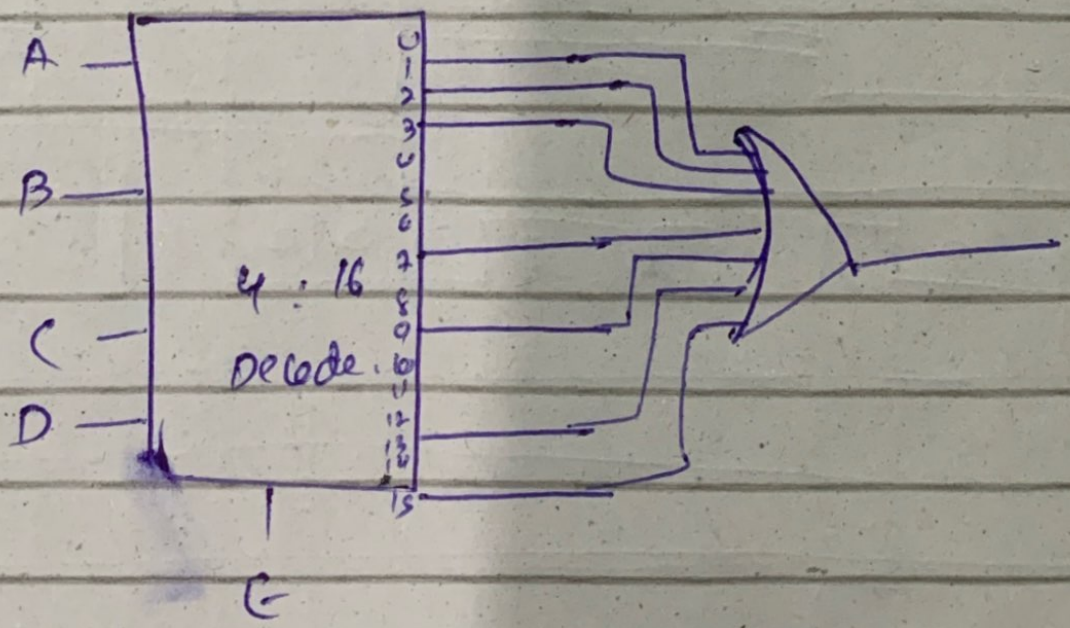


No.

Date

Q:15

$F(A,B,C,D) = \Sigma(1,2,3,7,9,13,15)$



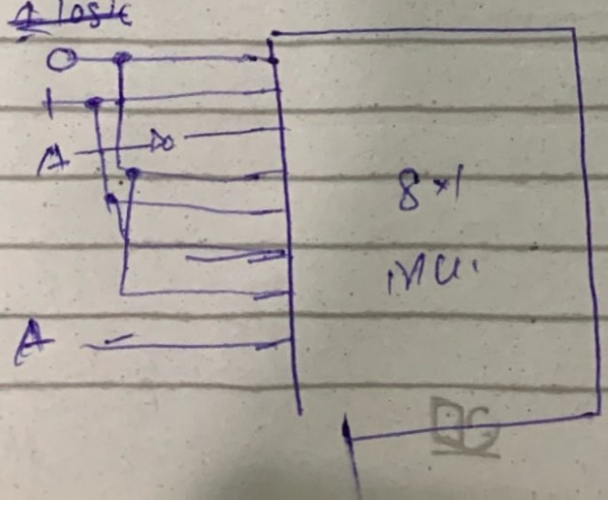
~~Q:16)~~

~~$\Sigma(2,3,4,8,9,10,11,15)$~~

Date

Q16 $\Sigma(0,3,4,8,9,10,11,15)$

A_3	A_2	A_1	A_0	X	:	X
0	0	0	0	0	:	0
0	0	0	1	0	:	
0	0	1	0	1	:	1
0	0	1	1	1	:	
0	1	0	0	1	:	$\bar{A_0}$
0	1	0	1	0	:	
0	1	1	0	0	:	0
0	1	1	1	0	:	
1	0	0	0	1	:	1
1	0	0	1	1	:	
1	0	1	0	1	:	1
1	0	1	1	1	:	
1	1	0	0	0	:	0
1	1	0	1	0	:	
1	1	1	0	0	:	A_0
1	1	1	1	1	:	



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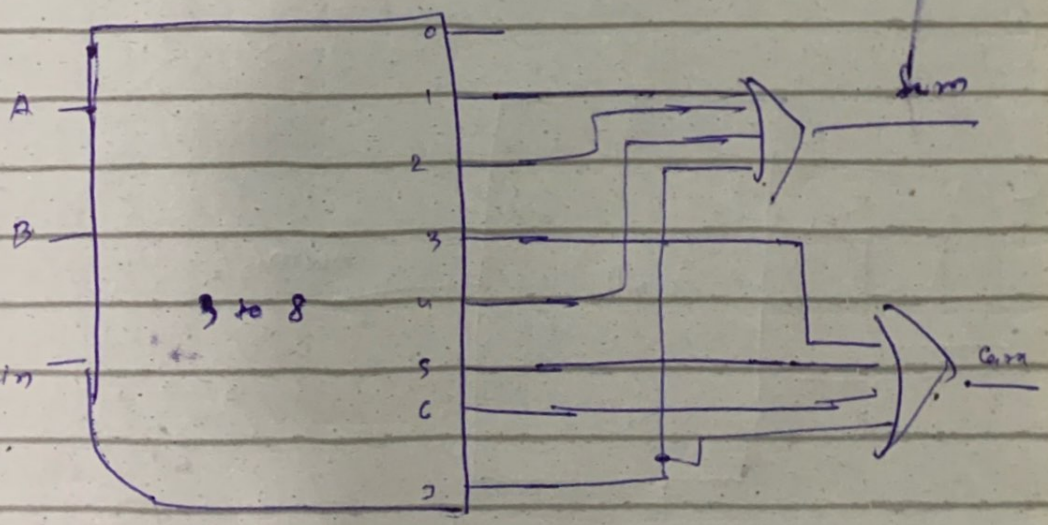
(b)

A	B	Cin	Sum	Cout
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

a)



No.

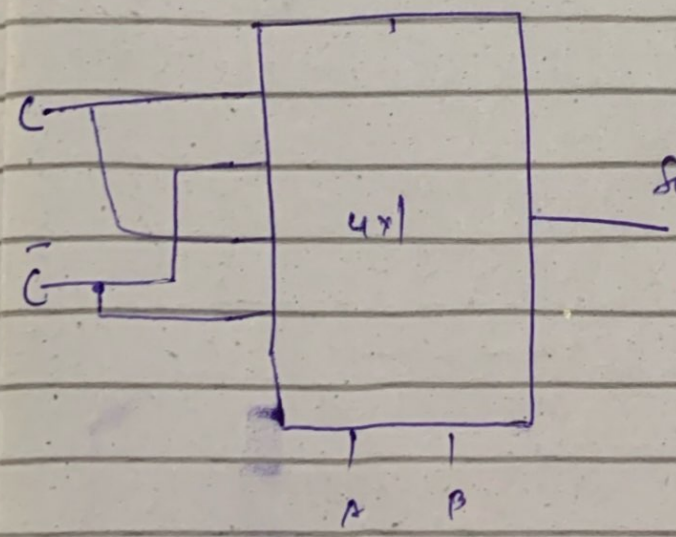
Date

(b) 4×1

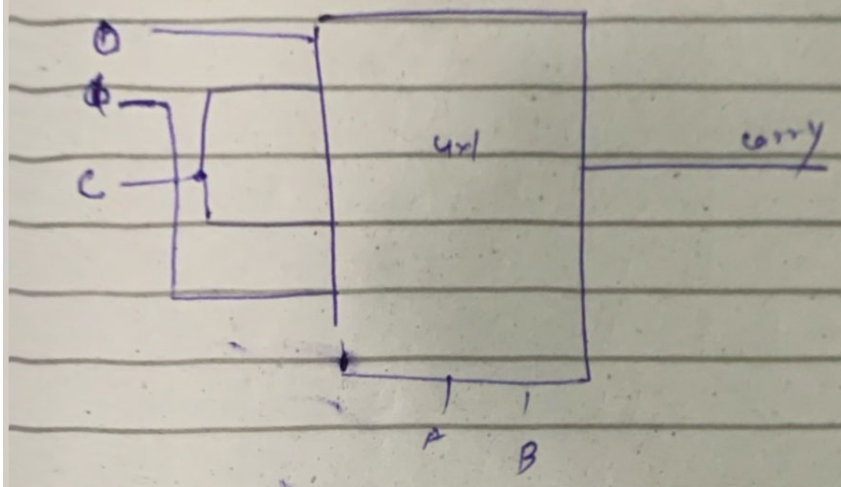
A	B	Cin	Sum S	Carry C
0	0	0	0	0
0	0	1	1	0
0	1	0	1	0
0	1	1	0	1
1	0	0	1	0
1	0	1	0	1
1	1	0	0	1
1	1	1	1	1

Sum = $\bar{C}_{in}$ + C

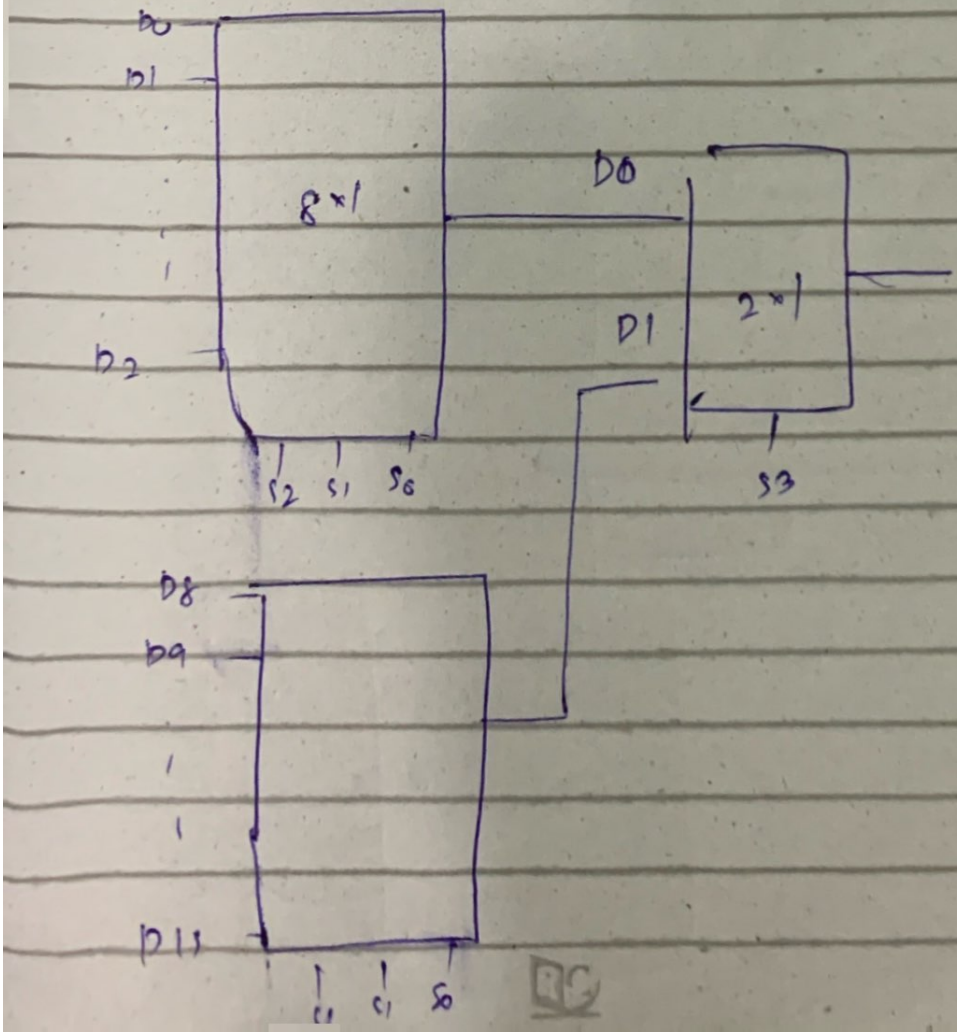
Carry = C + C



Date



18)



No.