

Date: \_\_\_\_\_

Name :- Daniyal

ID :- 17011

Program :- BS (CS)

Subject :- Digital logic  
design

Instructor :-

M. Amin

Date \_\_\_\_\_

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"Question no 1"

Determine the outputs of a full-adder for the following inputs:

$$A=1, B=0, C_{in}=1$$

Answer:

XOR (upper) output = 1, Sum output = 0,  
XAND (upper) output = 1,

AND (lower) output = 0, Carry output = 1

Question no 2:

what are the half-adder inputs that will produce the following output  
 $\Sigma = 0, C_{out} = 0$

Answer:

$$A=? , B=?$$

The  $\Sigma$  and  $C_{out}$  both are zero so the A and B are also zero

$$A=0 , B=0$$

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Question no 3:-

Determine the outputs of a full-Adder for the following inputs

$$A = 1, B = 1, C_{in} = 1$$

Answer..

$A = 1, B = 1, C_{in} = 1$   
The out for both is

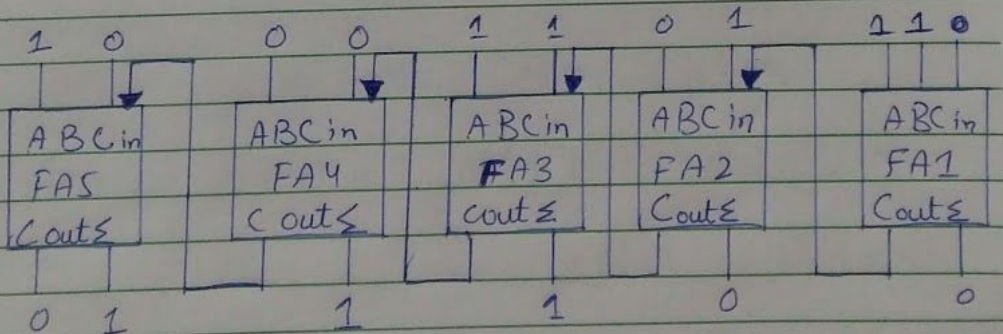
$$\Sigma = 1, C_{out} = 1$$

Question no 4:-

10101      Solution:-

00111

11100



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"Question no 5"

Answer:-

a) when the  $\overline{\text{Add/Subt}}$  is high, the input bits of B will be complemented, and the resulting  $\Sigma$  will be the subtraction of the input bits.

b) when the  $\overline{\text{Add/Subt}}$  is low, the input bits of B will ~~be~~ not be changed and the circuit will work as a parallel adder for the input bits.

Question no 6:-

Answer:-

$\text{Add/Subt} = 1$ ,  $A = 0101$ ,  $B = 1101$

for  $\Sigma_0$ :  $A_0 = 0$ ,  $B_0 = 1 \oplus 1$ ,  $C_{in} = 1$

$\Sigma_0 = 0 + 0 + 1 = \boxed{1}$ ,  $C_{out} = 0$

For  $\Sigma_1$ :  $A_1 = 1$ ,  $B_1 = 1 \oplus 0$ ,  $C_{in} = 0$

$\Sigma_1 = 1 + 1 + 0 = \boxed{0}$ ,  $C_{out} = 1$

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$$\text{For } \Sigma_2 = A_2 = 0, B_2 = 1 \oplus 1, \text{ Cin} = 1$$

$$\Sigma_2 = 0 + 0 + 1 = \boxed{1}, \text{ Cout} = 0$$

$$\text{For } \Sigma_3 = A_3 = 1, B_3 = 1 \oplus 1, \text{ Cout} = 0$$

$$\Sigma_3 = 1 + 0 + 0 = \boxed{1}, \text{ Cout} = 0$$

$$\Sigma = \Sigma_3 \Sigma_2 \Sigma_1 \Sigma_0 = 1101, \text{ Cout} = 0$$

Answer.



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"Question no 8"

Answer:-

$A_4$	$A_3$	$A_2$	$A_1$	$B_4$	$B_3$	$B_2$	$B_1$	$\Sigma_5$	$\Sigma_4$	$\Sigma_3$	$\Sigma_2$	$\Sigma_1$
1	0	0	1	0	0	0	1	0	1	0	1	0
1	0	1	0	1	1	0	1	0	0	1	1	1
0	0	1	0	0	0	1	1	0	0	1	0	1
1	0	1	1	0	1	1	1	0	0	0	1	0

$$\Sigma_1 = 0110$$

$$\Sigma_2 = 1011$$

$$\Sigma_3 = 0110$$

$$\Sigma_4 = 0001$$

$$\Sigma_5 = 1000$$

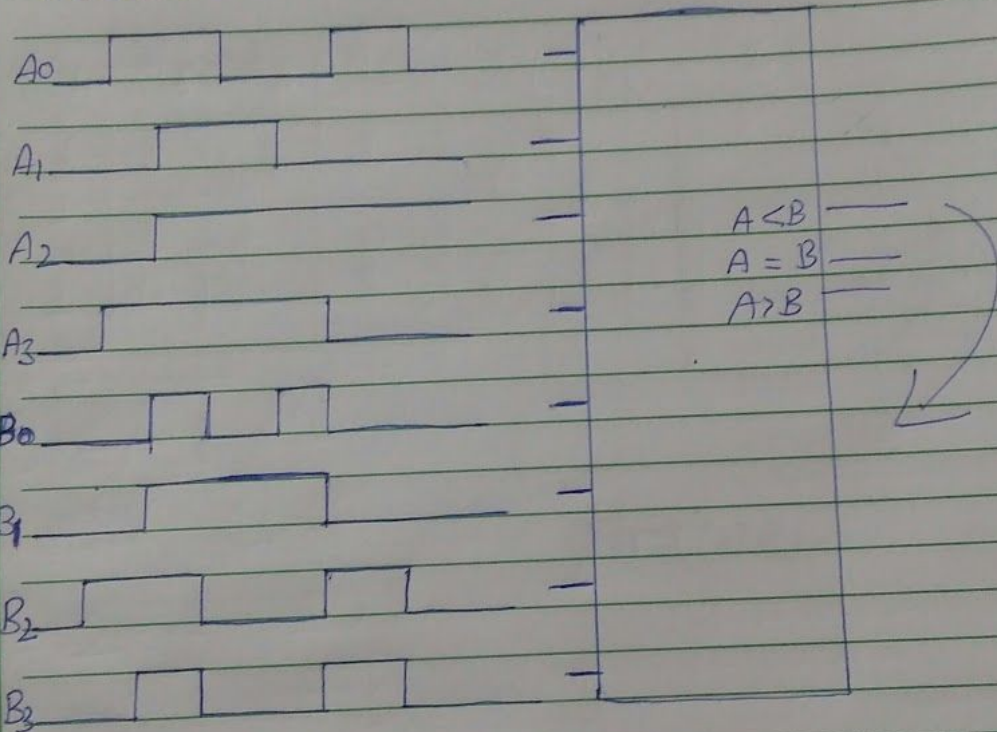
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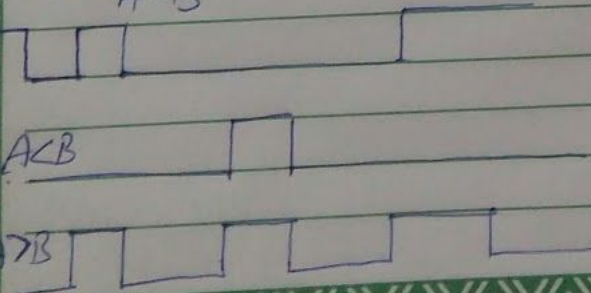
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"Question no 10"

Answer.



~~A < B~~  
~~A = B~~  
~~A > B~~  
A = B



SMK



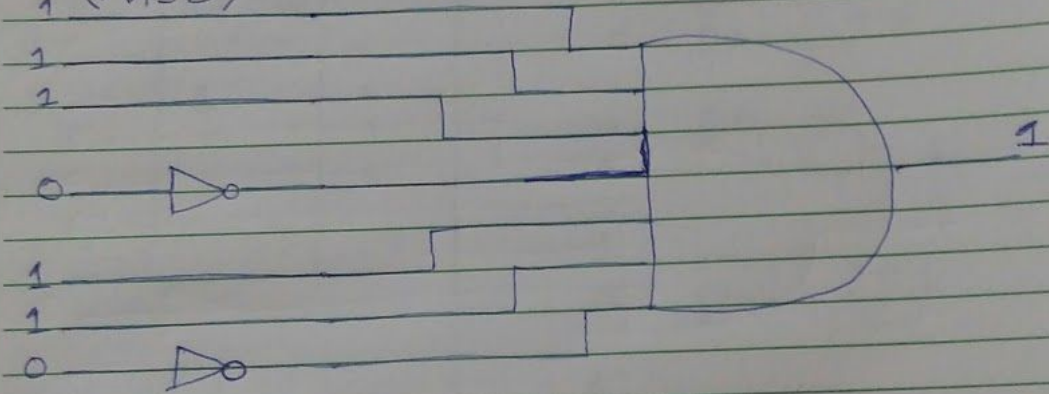
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"Question no 11"

Answer:-

(MSB)



(LSB)

Answer.

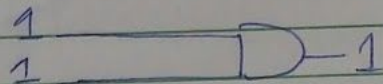
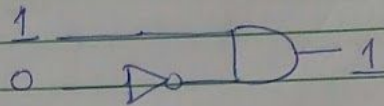
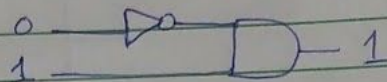
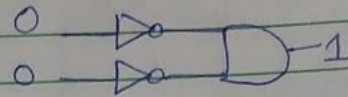
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"Question no 12"

Answer:-

BIN/DEC	
	1
1	2
2	3
	4



Answer.

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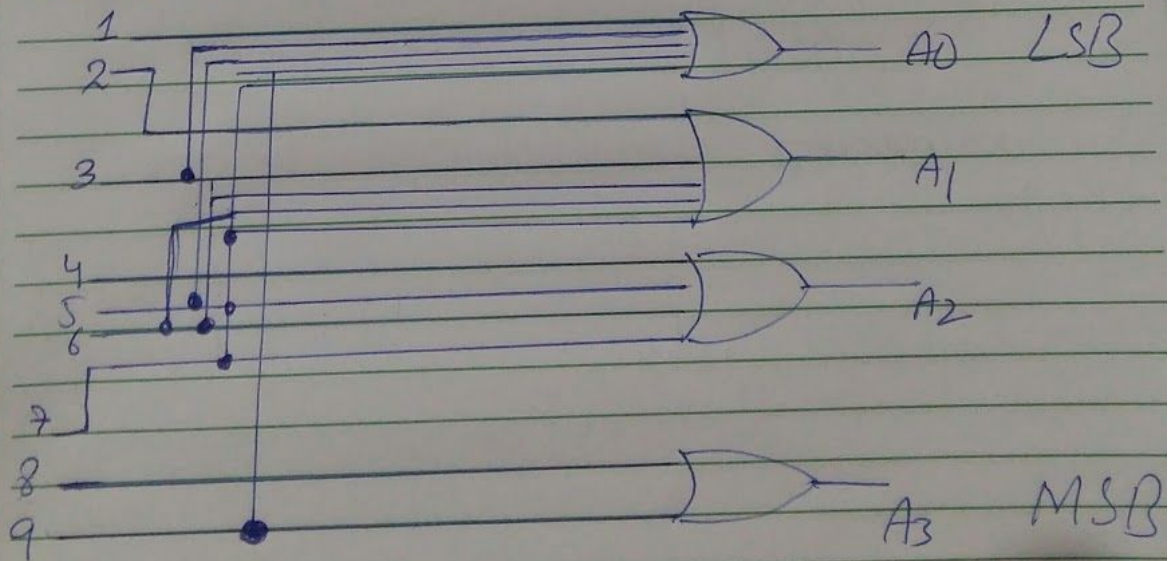
"Question no 13"

Answer:-



"Question no 14"

Answer:-

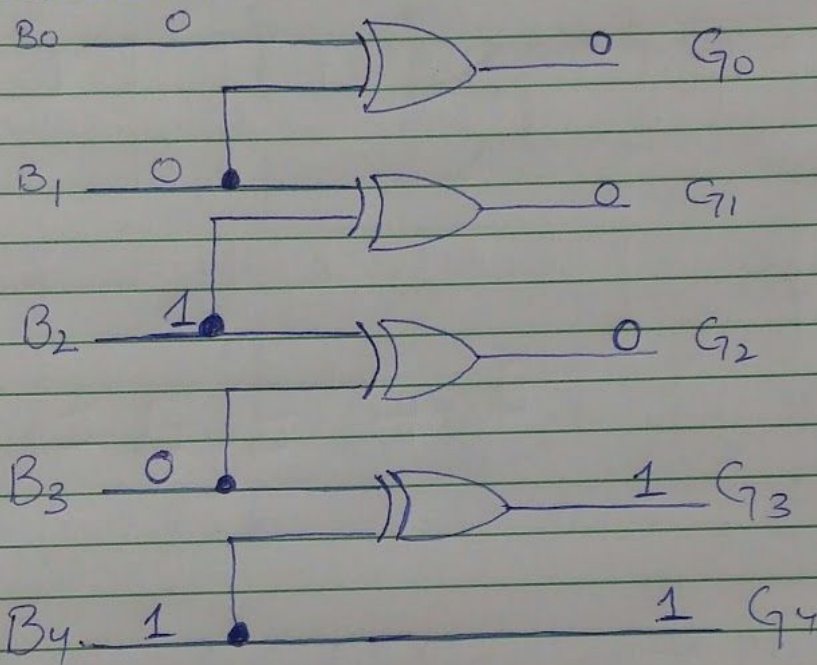


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"Question no 15"

Answer:-



$$10100_B = 11000_G$$

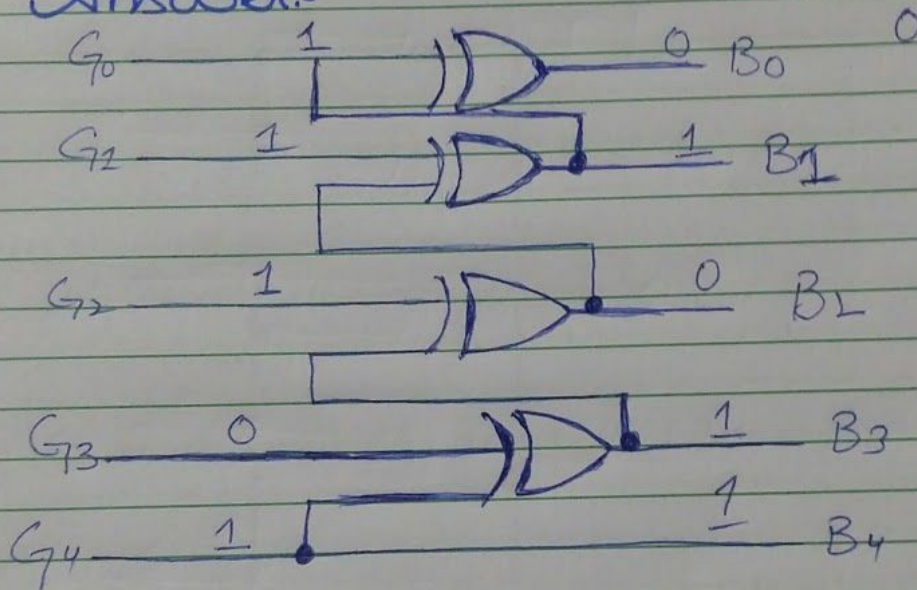
Answer.

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"Question no 16"

Answer:-



$$10111G = 11010B$$

Answer.

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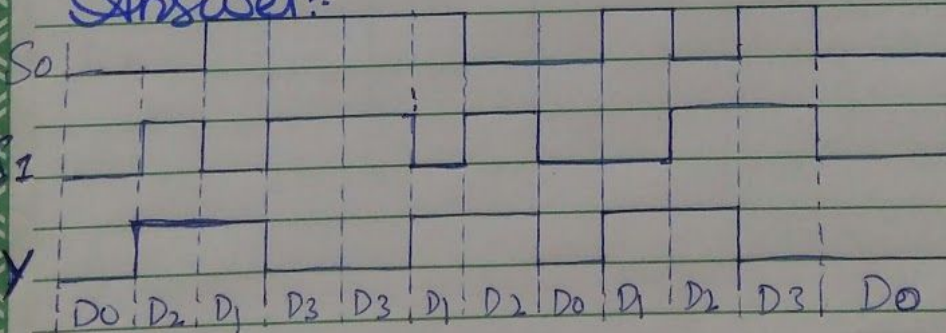
"Question no 17"

Answer:-

$S_0$ 0	
$S_1$ 1	
$D_0$ 1	$D_1 = 0$ Y
$D_1$ 0	$S_0, S_1 = 01 \Rightarrow 0_1$
$D_2$ 0	
$D_3$ 1	

"Question no 18"

Answer:-

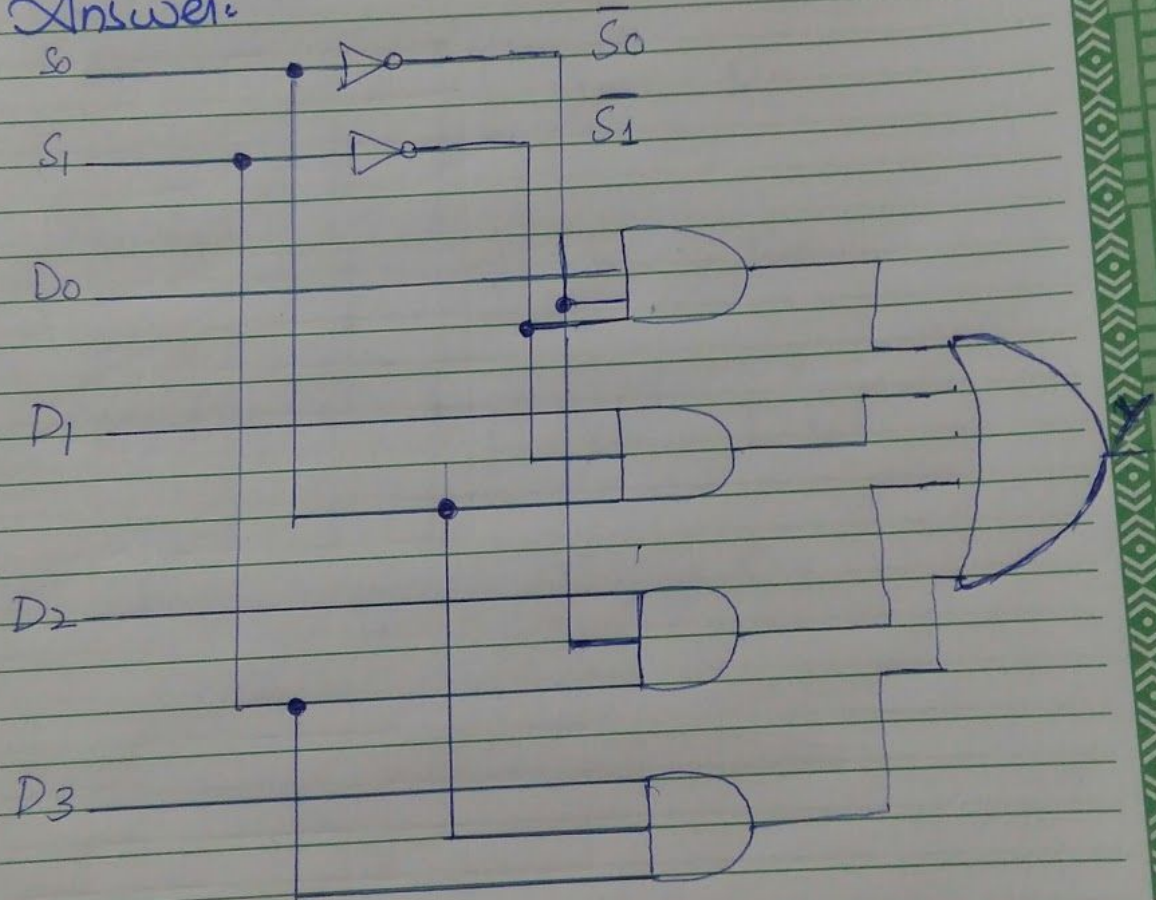


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"Question no 19"

Answer:

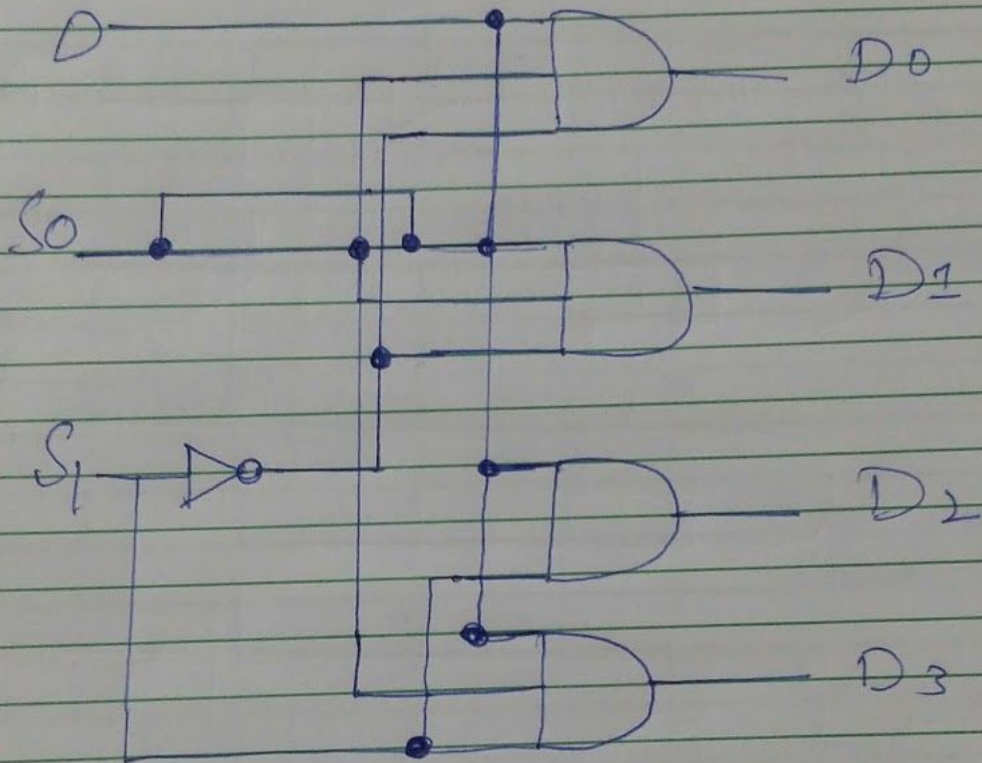


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'Question no 20''

Answer:-



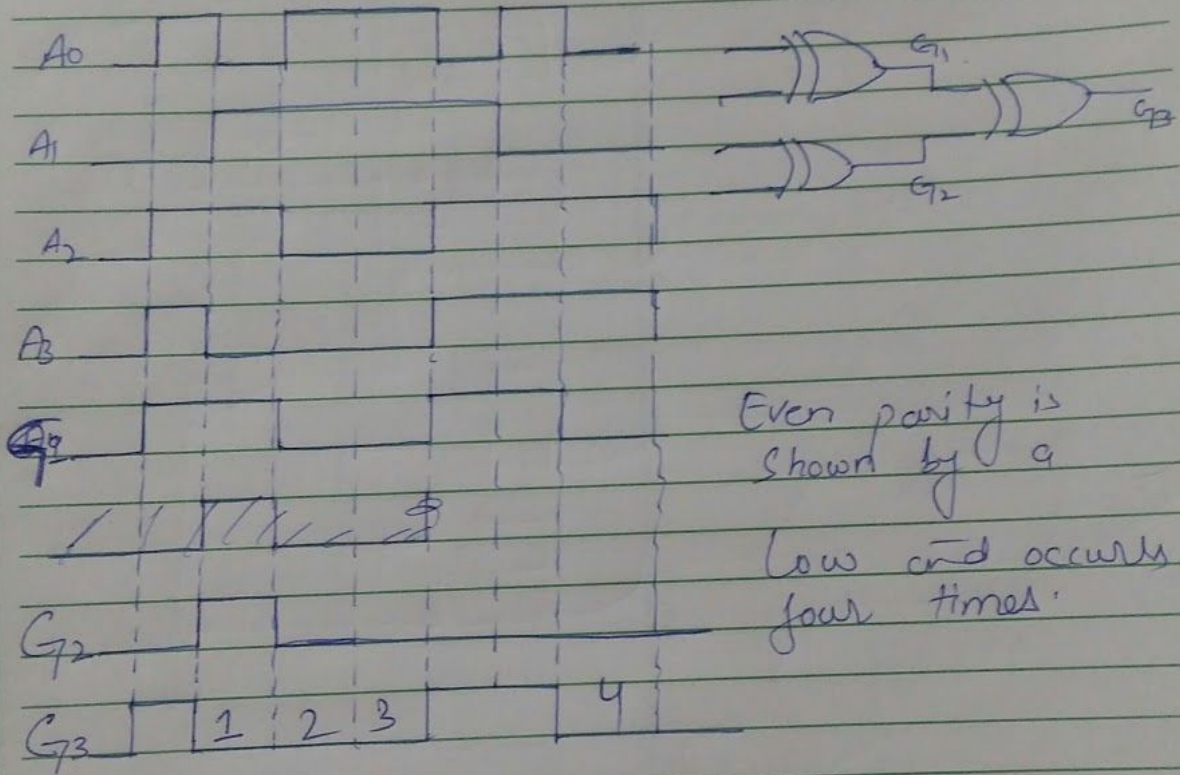


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"Question no 21"

Answer:-

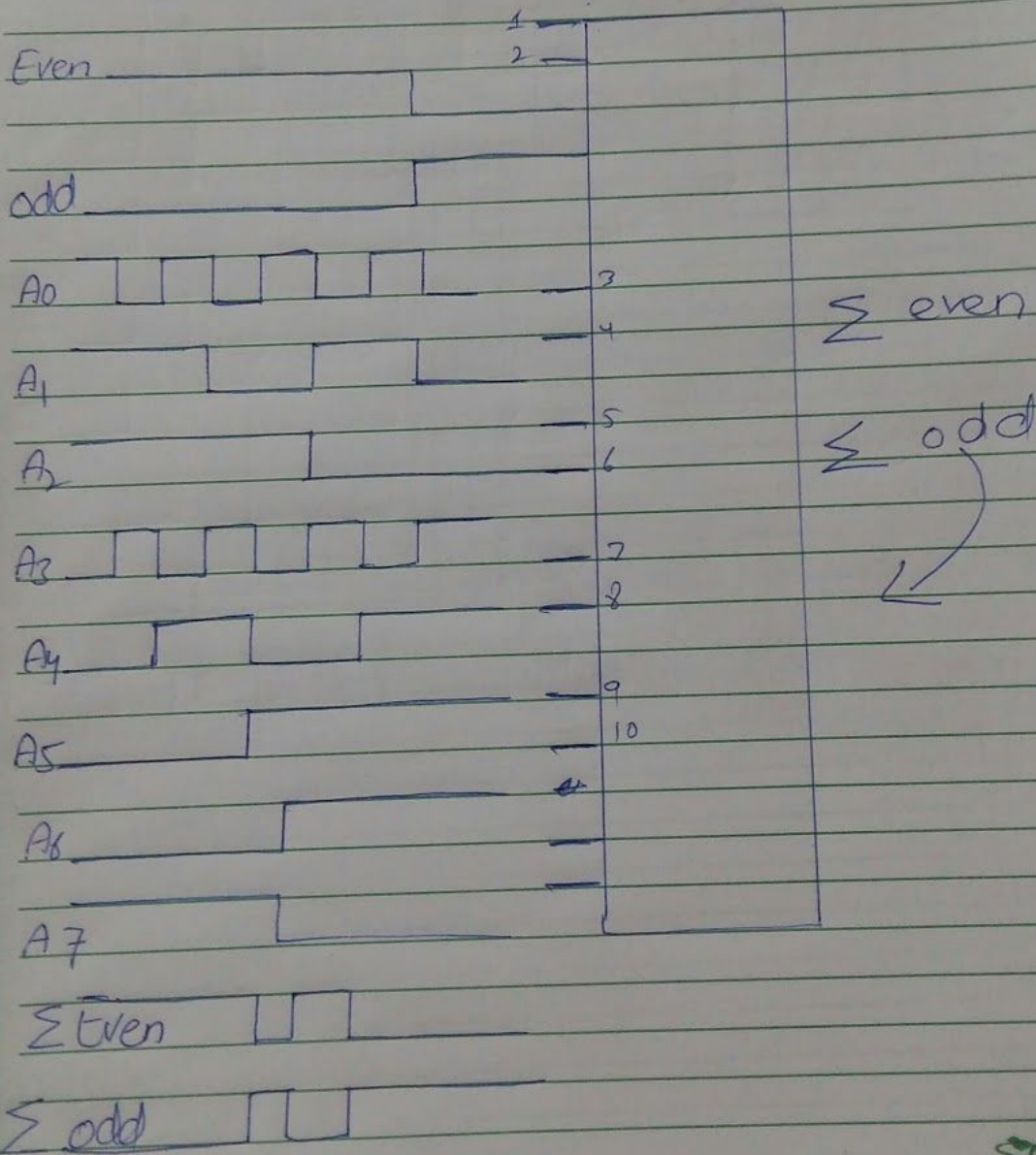


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"Question:- no 2<sup>n</sup>:-"

Answer:-



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"Question no 23"

Answer:-

