Name: Wajiha Hanif Awan

Seat No: B18158064

Q:1

Q:1 Divide W by V using Restoring Division Algorithm. Where W & V are two Binary nos represented in two's complement notation. To find decimal values of W & V for you do the arithmetic. following:

* Let last digit of your seat no. (z) & second last be (y), also sum of your seat no. to get w.

Let;

V=y if $y \geq 1$ or

V=z if y=0,1 & z>1 or

V=9 if both $z \geq 2$ & $y \geq 2$ &

W=w+6. $\Rightarrow 33+6=39$

w = 1+8+1+5+8+0+6+4 = 33

y = 6

z = 4

V=6 W=39

Divide W by V by Restoring Division Algorithm:

* 2's complement:-

W=39 $\Rightarrow$ 1 0 0 1 1 1 (32 16 8 4 2 1)

~39 0 1 1 0 0 0

2's:- +1

0 1 1 0 0 1

V=6 $\Rightarrow$ 0 0 0 1 1 0

~6 $\Rightarrow$ 1 1 1 0 0 1

2's:- +1

1 1 1 0 1 0

Q = 39 (011001)

M = 6 (111010)

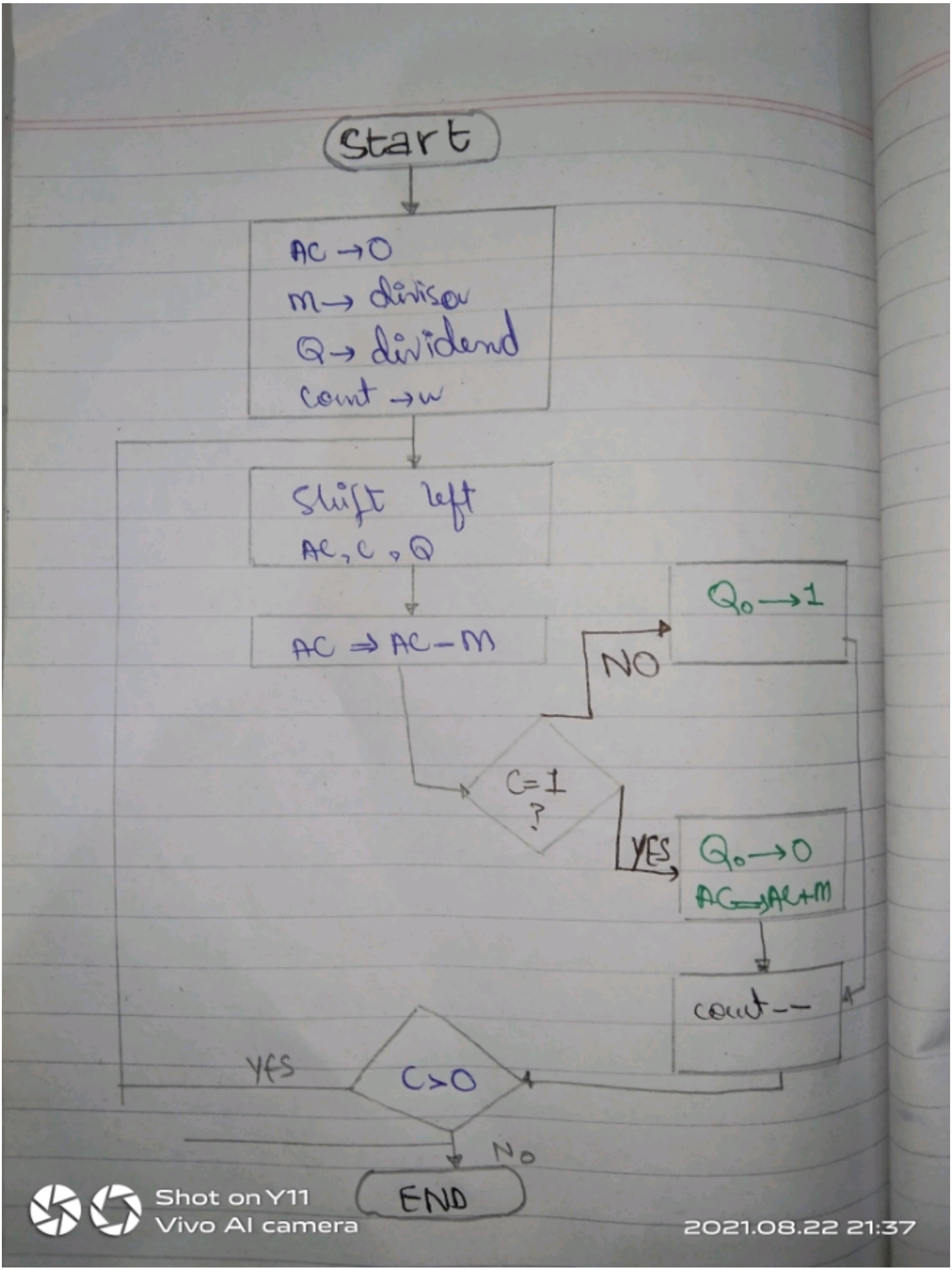
n = 6

-M = 000110

	C	AC	Q	
	0	000000	011001	← Initial
	0	000000	110011	① Shift left ② AC − M
①	0	000110	110011	0000000 + 0000110 0000110
	0	001101	100111	① Shift left ② C, AC − M
②	0	010011	100111	0001101 + 0000110 0010011
	0	100111	001111	① Shift left ② C, AC − M
③	0	101101	001111	0100111 + 0000110 0101001

	C	AC	Q	
	1	011010	01111 □	① Shift left
				② C, AC − M
④	1	100000	01111 [0]	1'0'11'010
		③		+0000110
				1 1 00000
	0	011010	011110	④ C, AC + M
				1 1 0 0000
				+0 1 1 1 0 1 0
				0 0 1 1 0 1 0
	0	110100	11110 □	① Shift left
				② C, AC − M
⑤	0	111010	11110 [1]	0 1 1 0 1 0 0
		③		+0000110
				0 1 1 1 0 1 0
	1	110101	1110 □	① Shift left
				② C, AC − M
⑥	1	111011	1110 [1]	1 1 1'0 1 0 1
		③		+0000110
	0	110101	111010	1 1 1 1 0 1 1
		Remainder	Quotient	④ C, AC + M
				1 1 1 1 0 1 1

Verified



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Q:2

Q2: Take two Integers A & B

A ⟶ B18 ⇒ A = -118

B ⟶ 064

using by Multiply Booth Algorithm

① 1's comp ⇒ 1 → 0, 0 → 1

② +1

* 2's Complement:

* -118

128 64 32 16 8 4 2 1

118 ⇒ 0 1 1 1 0 1 1 0

~118 ⇒ 1 0 0 0 1 0 0 1

+ 1

-118 ⇒ 1 0 0 0 1 0 1 0

* 064

128 64 32 16 8 4 2 1

064 ⇒ 0 1 0 0 0 0 0 0

~064 ⇒ 1 0 1 1 1 1 1 1

+ 1

1 1 0 0 0 0 0 0

(-ve) x (+ve) = (-ve Product)

M = 10001010

Q = 11000000

-M = 01110110

AC | Q

AC = 0

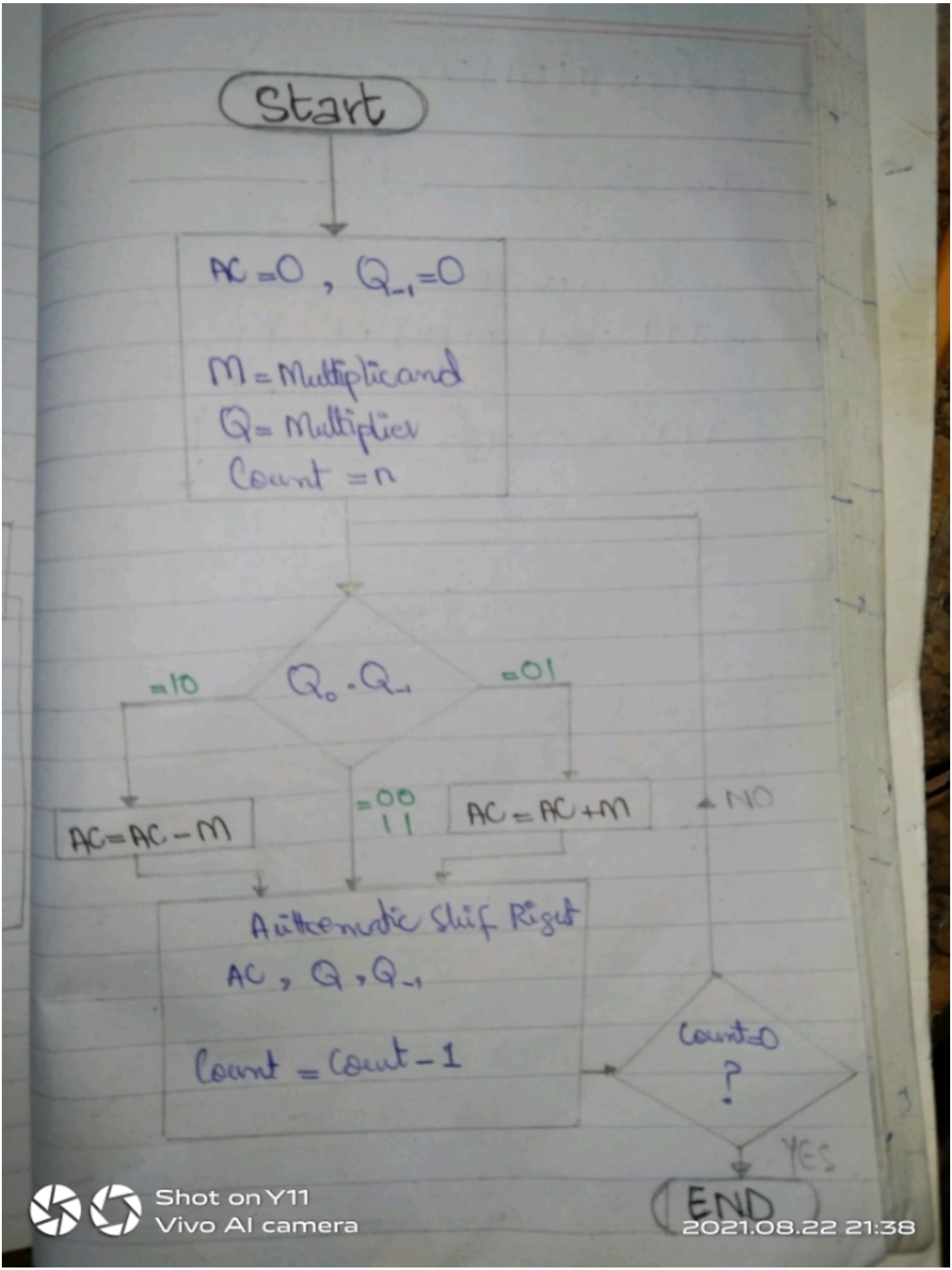
Q-1 = 0

n = 8

AC = AC - M

AC + (-M)

AC = AC + M



Name:
Seat No:

Booth's Algorithm

	AC	Q	Q_{-1}	Operation
	00000000	11000000	0	Arithmatic Shift Right
①			0.0 = ASR	
	00000000	01100000	0	
			0.0 = ASR	Arithmatic Shif Right
②	00000000	00110000	0	
			0.0 = ASR	A.Arith. Shift Right
③	00000000	00011000	0	
			0.0 = ASR	Arith. Shift Right
④	00000000	00001100	0	
			0.0 = ASR	Arith. Shift Right.
⑤	00000000	00000110	0	
			0.0 = ASR	Arith. Shift Right
⑥	00000000	00000011	0	
			1.0 AC=AC-M	AC = AC − M = AC + (−M)
	01110110	00000011	0	00000000 + 01110110 = 01110110
⑦				
	00111011	00000001	1	2) Arith. Shift Right
			1.1 = ASR	
⑧	00011101	10000000	1	Arith. Shift Right

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$\Rightarrow (0001110111000000)_2$

Take 2's complement'

$\Rightarrow$ 000 1110 1100 000 00

$\Rightarrow$ 111 0001 0011 1111 11

+ 1

111 0001 0100 000 00

Ans.