Subject: Computer Architecture and Organization
Subject Code: CS205

Name: Subhojit Ghimire
Sch Id: 1910160
Branch: CSE - B

Q. Compute 16/3 using Restoring Algorithm.

Soln:

Q, Dividend = $(16)_{10} = (10000)_2$

M, Divisor = $(3)_{10} = (00011)_2$

$n = 5$

$A = 0$

n	M	A	Q	Operation
5	00011	00000	10000	Initialisation.
5	00011	00001	0000_	L.S. AQ
		11110	0000_	A = A-M
		00001	00000	Q[0]=0; Restore A
4	00011	00010	0000_	L.S. AQ
		11111	0000_	A=A-M
		00010	00000	Q[0]=0; Restore A
3	00011	00100	0000_	L.S. AQ
		00001	0000_	A = A-M
		00001	00001	Q[0]=1;
2	00011	00010	0001_	L.S.AQ
		11111	0001_	A = A-M
		00010	00010	Q[0]=0; Restore A
1	00011	00100	0010_	L.S. AQ
		00001	0010_	A = A-M
		00001	00101	Q[0]=1

Remainder | Quotient

$\therefore$ Remainder $= (00001)_2 = (1)_{10}$

$\therefore$ Quotient $= (00101)_2 = (5)_{10}$