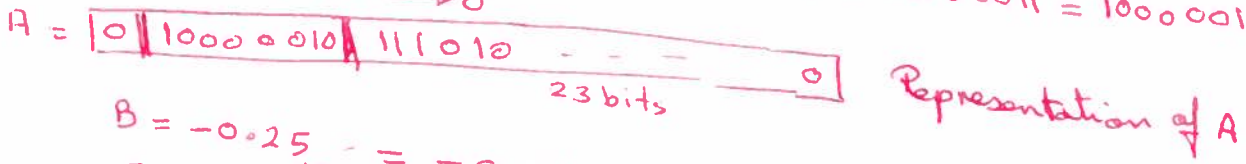
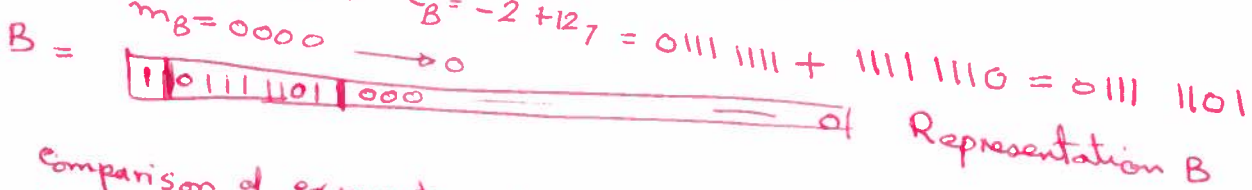


Q1) $A = 15.25_{10}$ in Binary $1111.01_2 = 1.11101 \times 2^3$

$S_R = 0$ +ve, $e_A = \text{bias} + 3 = 01111111 + 00000011 = 10000010$
 $m_A = 11101000 \rightarrow 0$



$B = -0.25_{10} = -0.01_2 = -1.0 \times 2^{-2}$
 $S_B = 1$ -ve, $e_B = -2 + 127 = 01111111 + 11111110 = 01111101$
 $m_B = 0000 \rightarrow 0$



Comparison of exponents $e_A > e_B$
 Difference of exponents $e_A - e_B = 10000010 - 01111101 = 00000101$

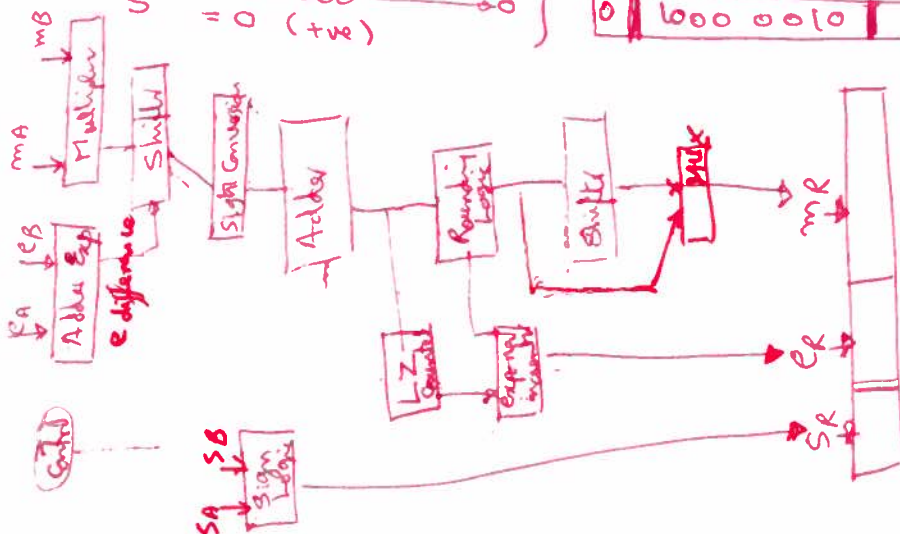
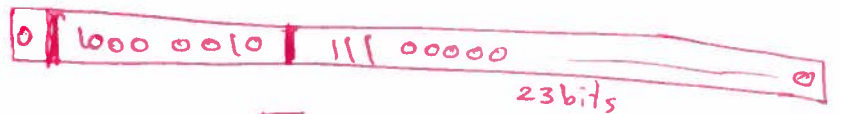
shift smaller operand by $00000101 = 5_{10}$ to the right
 $m_B = 1.00000 \rightarrow \times 2^{-5} = 0.0001$

Now $A \ m_A + m_B$
 $1.11101 + (-0.0001) = 001.11101 + 111.1111$
 $= 01.11100$

$m_{\text{Result}} = 01.11100 \rightarrow 0 \times 2^3$

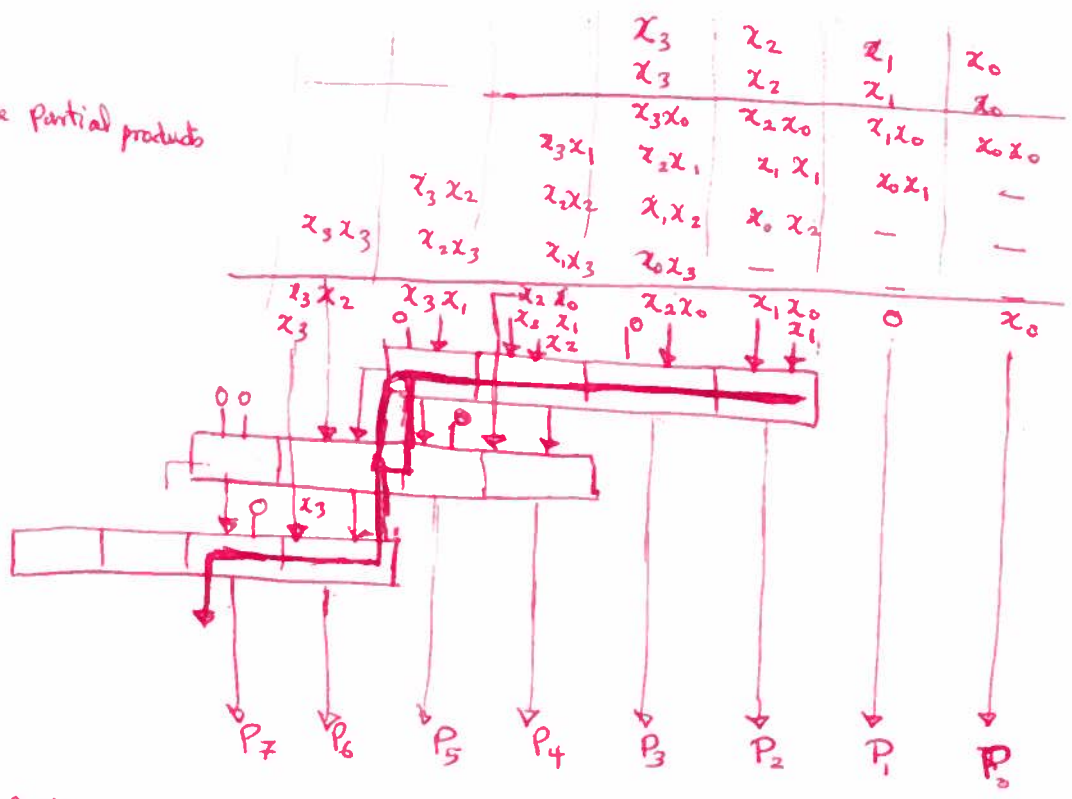
NORMALIZATION \rightarrow NOT Required
 Rounding \rightarrow NOT Required
 Subtraction $R(M_B + S) = 0$

$\therefore e_R = e_A = 10000010$
 $m_R = 011000$
 $S = 0$ (+ve)



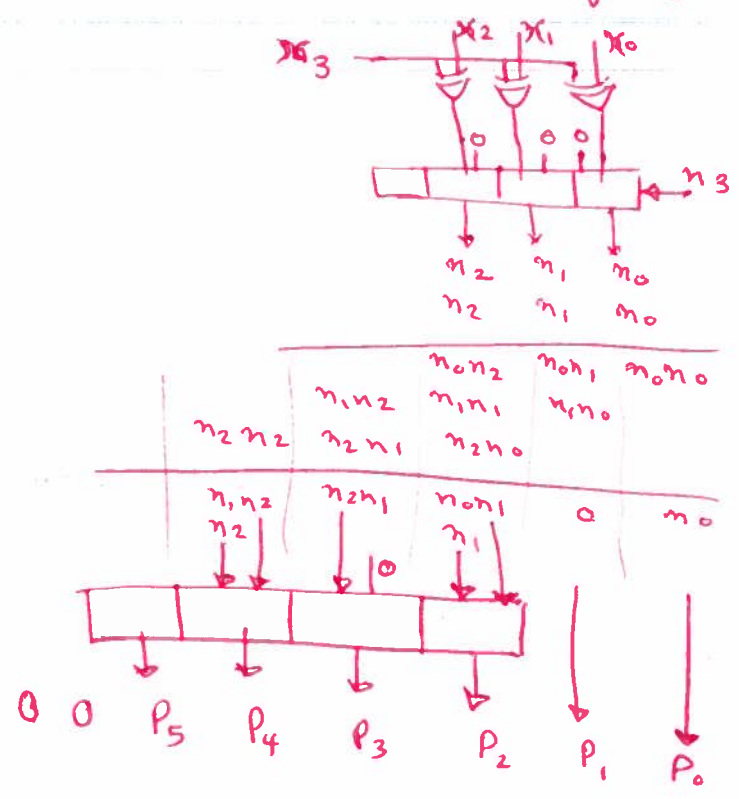
Please see class notes for more detail.

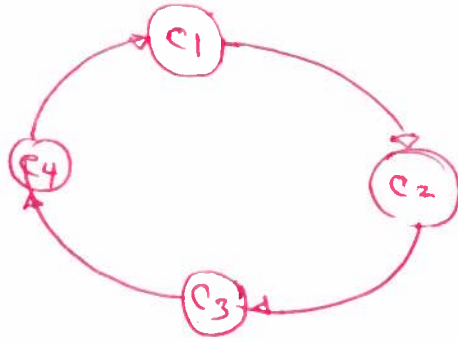
Use  to produce partial products



Delay = 8FA + 1 AND

If X is a 2' Complement no. then we have to convert the number as follows





State Diagram:

State Table:

Present State	Next State
C1	C2
C2	C3
C3	C4
C4	C1

State Assignment:

$C_1 = 00$, $C_2 = 01$, $C_3 = 10$, $C_4 = 11$

Excitation Table:

y_1, y_0	y_1^+, y_0^+
00	01
01	10
10	11
11	00

From Table Excitation Vectors can be read directly

$$y_1^+ = y_1 \oplus y_0$$

$$y_0^+ = \bar{y}_0$$

