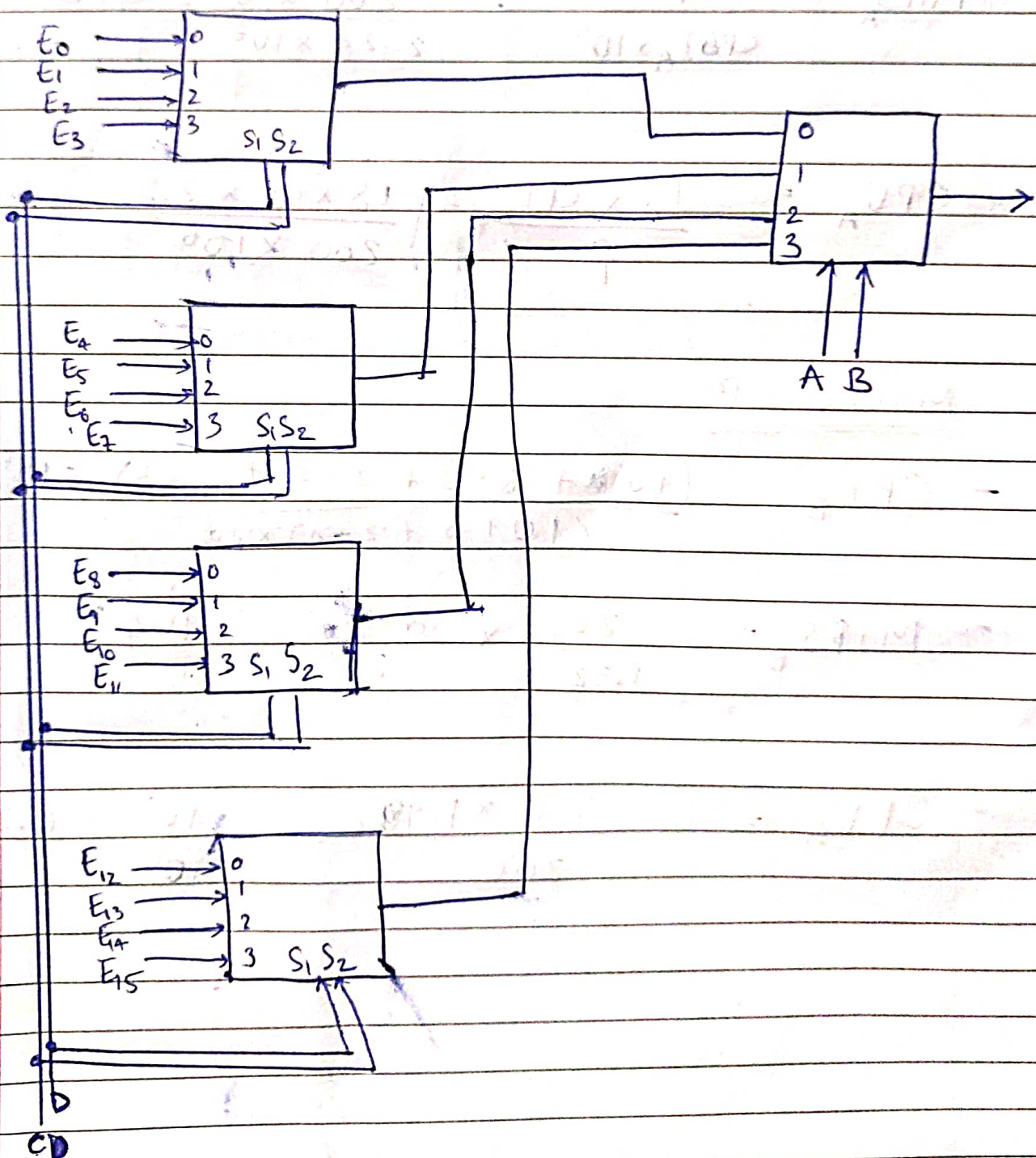DDV
foT
BTeck CE

~~Kirt~~ 19CEUON138

Roll = 127

Q1

(a)

Q1

Machine A

(a) $CPI_A = \dfrac{\Sigma CPI_i \times I_i}{I_c} = \dfrac{(8 + 4 \times 3 + 2 \times 4 + 4 \times 3) \times 10^6}{(8 + 4 + 2 + 4) \times 10^6} = 2.22$

$MIPS_A = \dfrac{f}{CPI_A \times 10^6} = \dfrac{200 \times 10^6}{2.22 \times 10^6} = 90$

$CPU_A = \dfrac{I_c \times CPI_A}{f} = \dfrac{18 \times 10^6 \times 2.2}{200 \times 10^6} = 0.2$

Machine B

$CPI_B = \dfrac{(10 \times 1 + 8 \times 2 + 2 \times 4 + 4 \times 3) \times 10^6}{(10 + 8 + 2 + 4) \times 10^6} = 1.92$

$MIPS_B = \dfrac{200}{1.92} \times 10^{6-6} = 104$

$CPU_B = \dfrac{24 \times 1.92}{200} \times \dfrac{10^6}{10^6} = 0.23$

Q2

(a) $\quad 1011 \times 1001 \quad = \quad 110\ 00\ 11$

$$
\begin{array}{r}
1011 \\
\times\ 1001 \\
\hline
1011 \\
0000x \\
0000xx \\
1011xxx \\
\hline
1100011
\end{array}
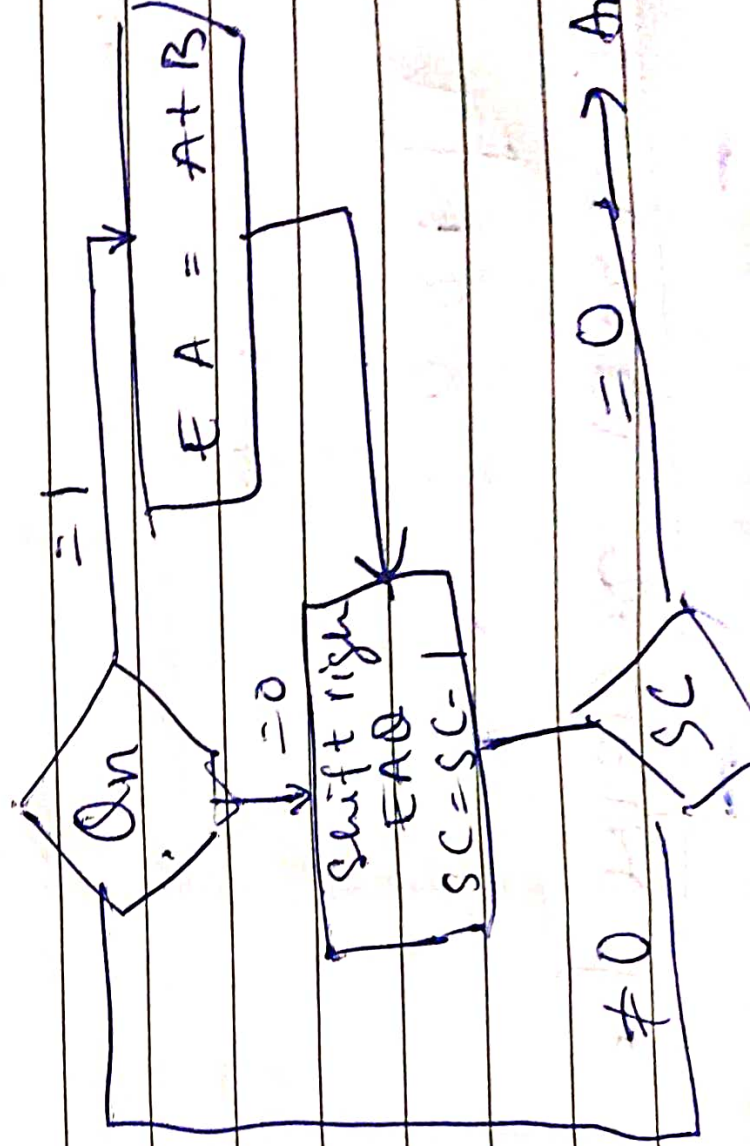$$

Multiplication operation

Multiplicant in B
Multiplier in Q

A Sign of A = (Sign of B) XOR (Bs)

$A = 0$

$E = 0$

Qn

= 1

= 0

$EA = A + B$

Shift right
EAQ
SC = SC - 1

SC

≠ 0

= 0 ⟶ Ans.

Q2

(b) word data : 00101001   (8 bit)

	D_8	D_7	D_6	D_5		D_4	D_3	D_2		D_1
bit data	0	0	1	0		1	0	0		1
recieved	0	0		0 . 0	C_8 1 .	1 . 0 . 0		C_4 0 / 1	C_2 1	C_1 1

Hamming Code.

$$C_1 = D_1 \oplus D_2 \oplus D_4 \oplus D_5 \oplus D_7$$
$$C_2 = D_1 \oplus D_3 \oplus D_4 \oplus D_6 \oplus D_7$$
$$C_3 \quad D_2 \oplus D_3 \oplus D_4 \oplus D_8$$
$$\quad\quad D_5 \oplus D_6 \oplus D_7 \oplus D_8$$

$$\Rightarrow \begin{pmatrix} C_1 = 0 \\ C_2 = 1 \\ C_4 = 1 \\ C_8 = 1 \end{pmatrix}$$

$C_1 C_2 C_4 C_8 = 0111$

Now $C_1 C_2 C_4 C_8 = 1101$

recieved

```
    1 1 1 0
 +  1 0 1 1
 ─────────────
 1 │ 1 0 0 1
```

Hence __error recieved .__