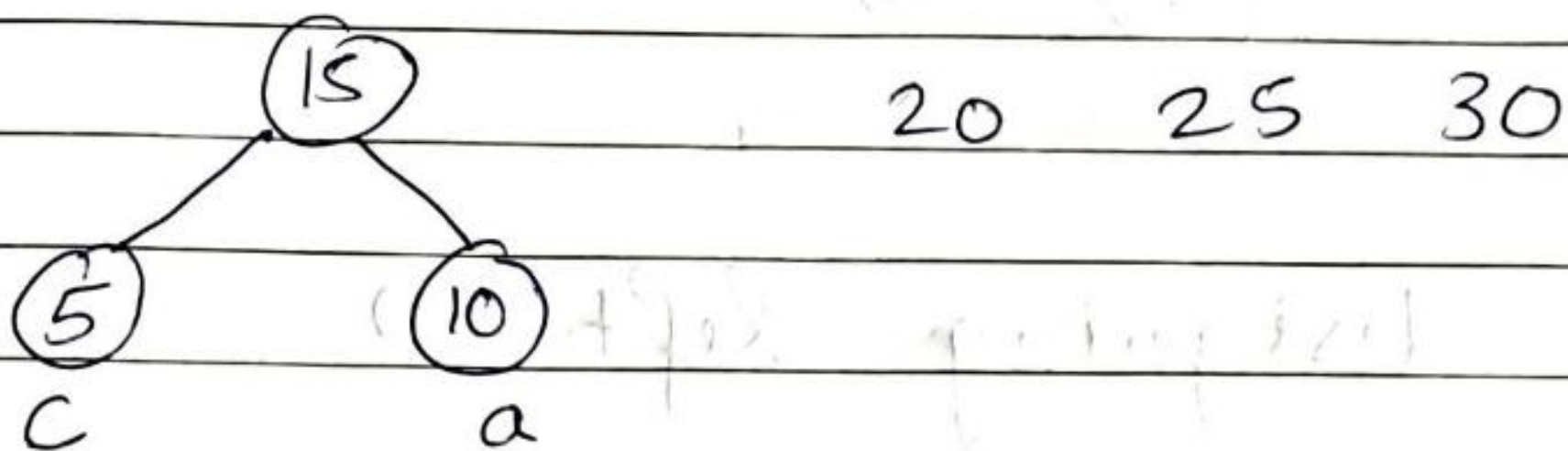


Solⁿ 3)

a: 10 b: 25 c: 5 d: 30 e: 20

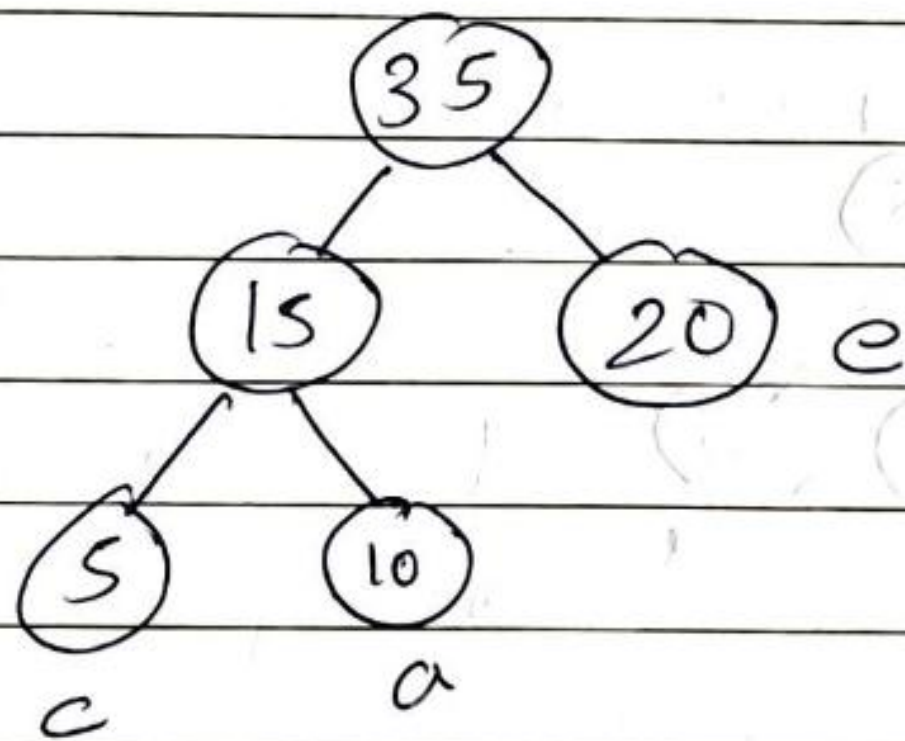
arranging in ascending order

c	a	e	b	d
5	10	20	25	30

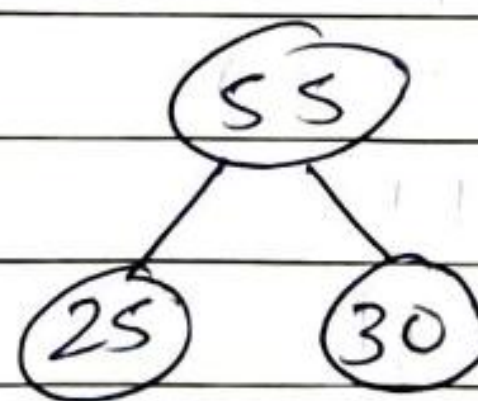
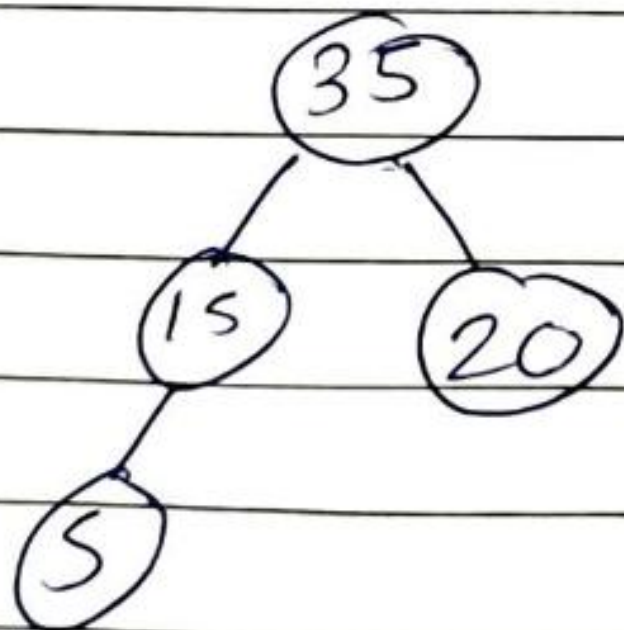
Combining 1st & min^{im} freq.

↓

$$\begin{array}{r} 20 \\ + 15 \\ \hline 35 \end{array}$$

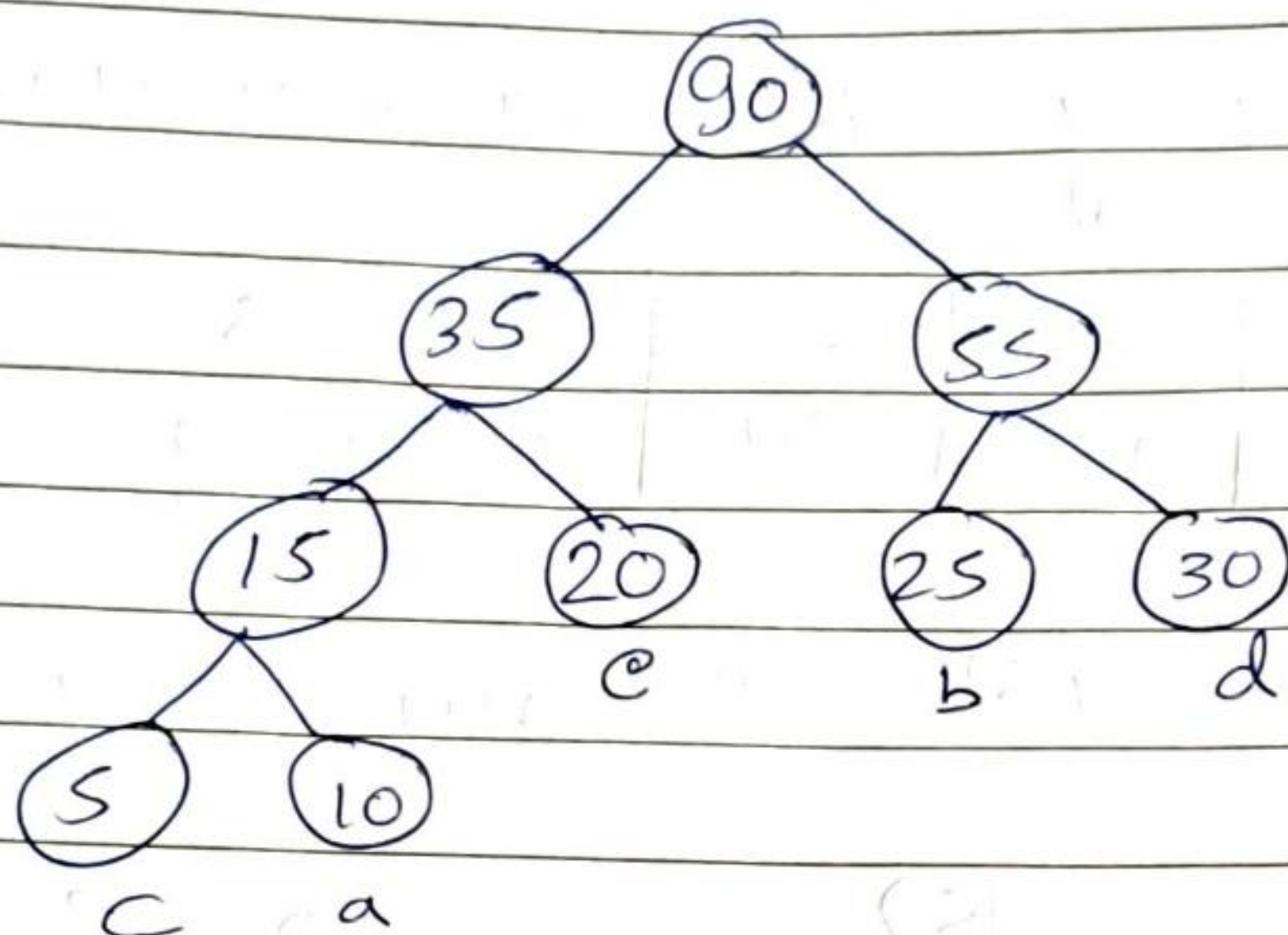


Since $25 < 35$ not combine
 So adding $25 + 35 = 55$

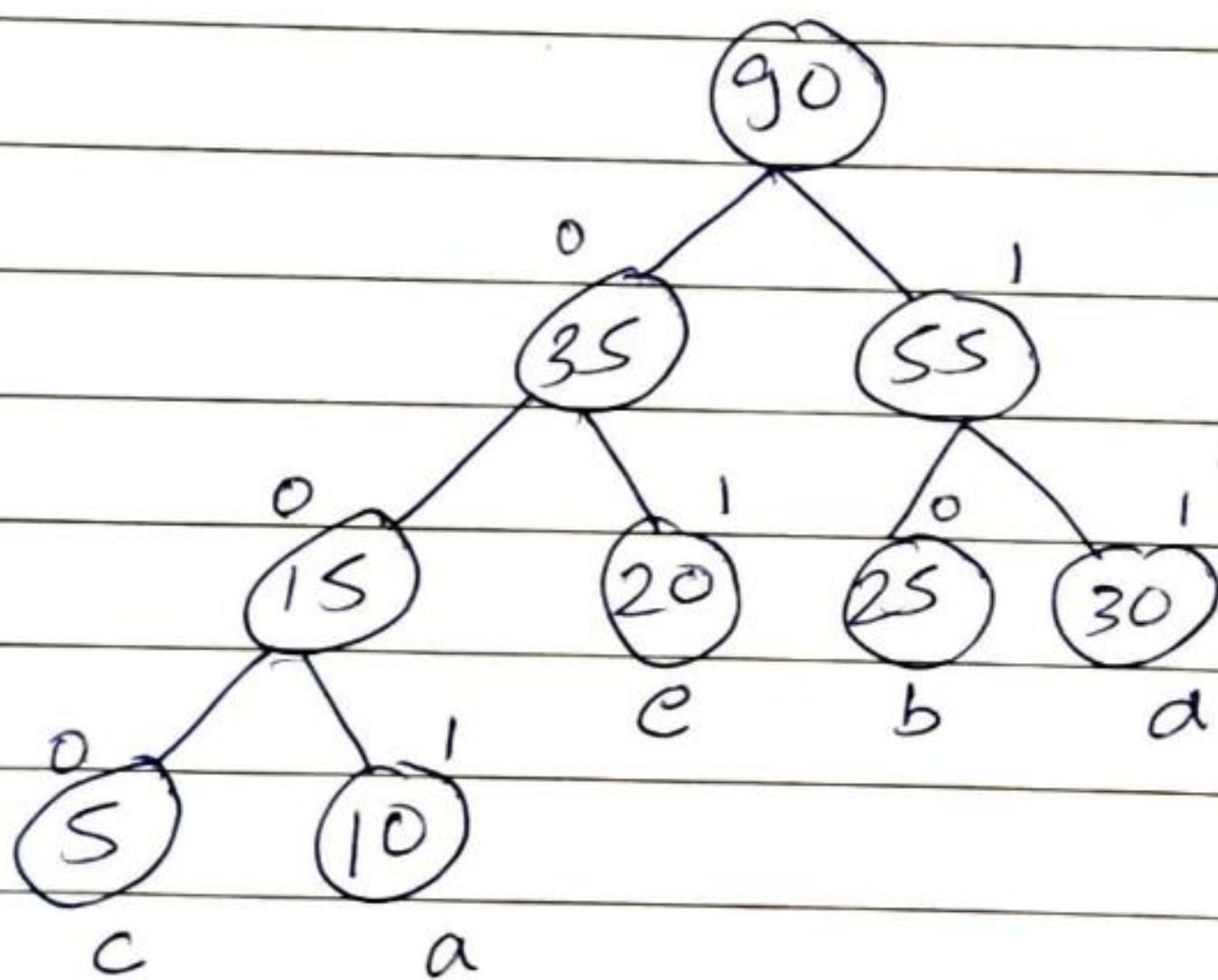


$$35 < 55$$

$$\begin{array}{r} 35 \\ 55 \\ \hline 90 \end{array}$$



Assigning left $\rightarrow 0$ right $\rightarrow 1$



a \rightarrow 001

b \rightarrow 10

c \rightarrow 000

d \rightarrow 11

e \rightarrow 01

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Bit required in Huffman

$$10(3) + 25(2) + 5(3) + 30(2) + 20(2) \\ 30 + 50 + 15 + 60 + 40 = 195$$

$$\text{Fixed} = 10(4) + 25(4) + 5(4) + 30(4) + 20(4) \\ = 40 + 100 + 20 + 120 + 80 = 360$$

hence ~~200~~ Huffman coding is much better.