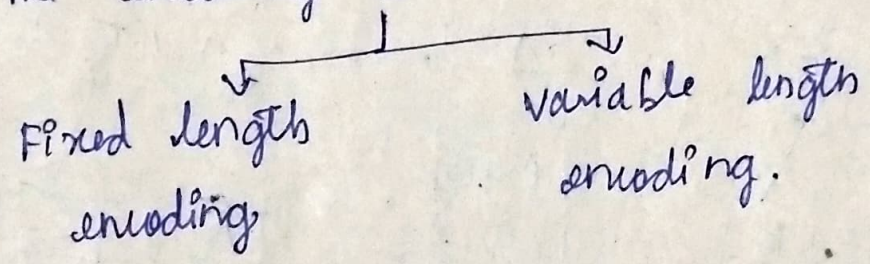


## 5) Huffman Trees and codes :

> Huffman trees are constructed for encoding a given text of  $n$  characters.

> Each character is associated with some bit sequence called code word.

> The encoding can be of two types.



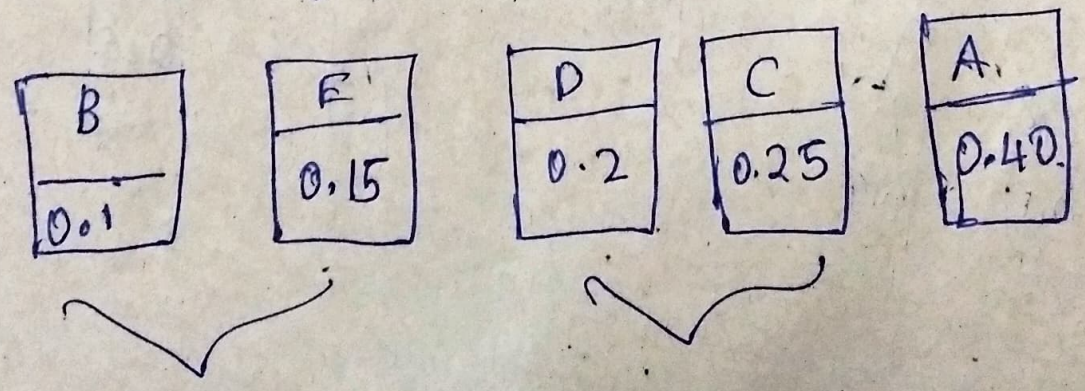
Eg :

Q).

Character	A	B	C	D	E
probability	0.40	0.1	0.25	0.2	0.15

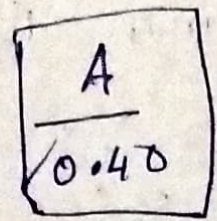
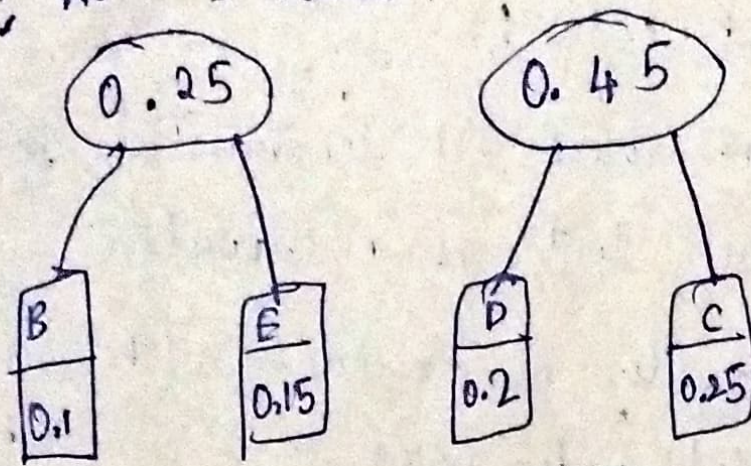
soln :

Step 1 : Ascending order.

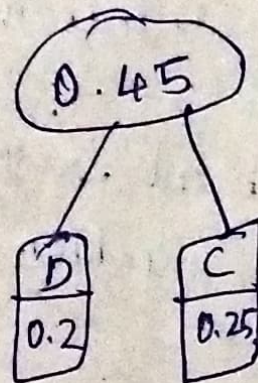
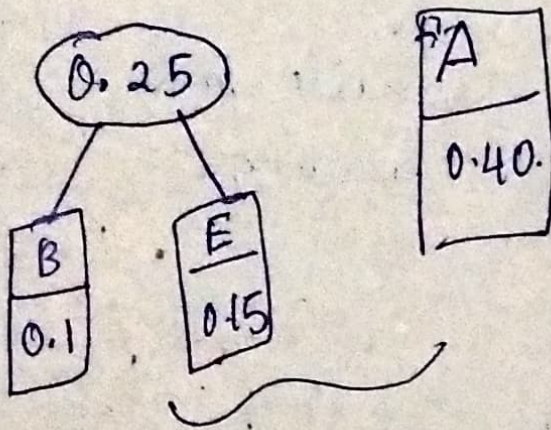




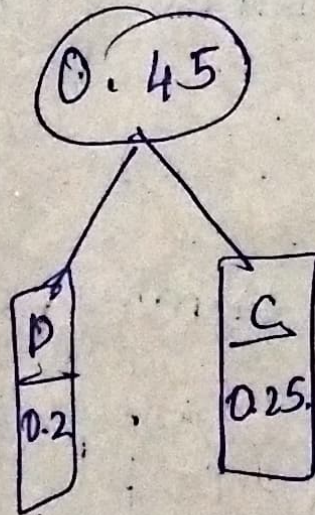
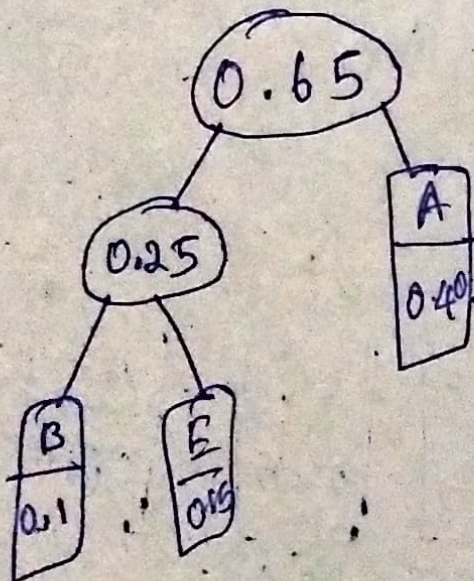
step 2: Add 2 Values!



step 3: Arranging order.

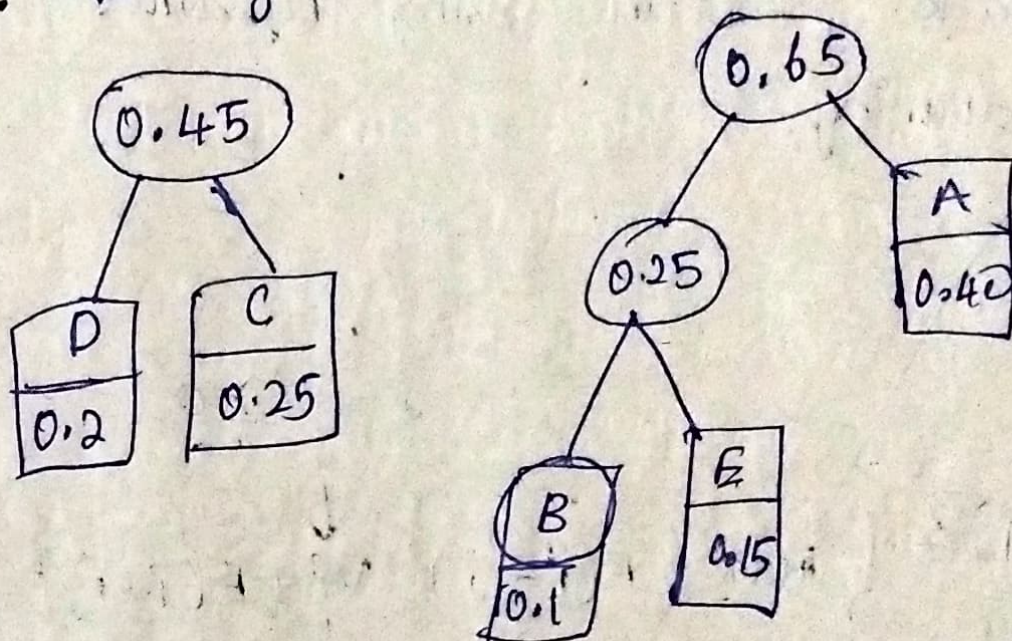


Step 4: Add two value.

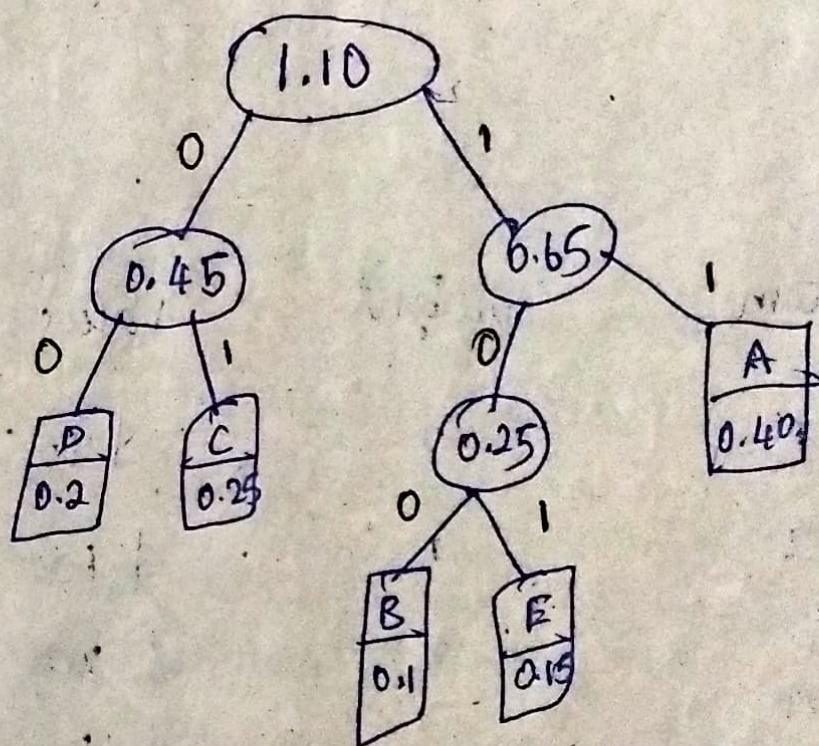




Step 5: Ascending order.



Step 6: Add two values. & Step 7: Put the code.



A → 11  
 B → 100  
 C → 01  
 D → 00  
 E → 101

⇒ Length of the code × probability.

$$= (2 \times 0.40) + (3 \times 0.1) + (2 \times 0.25) + (2 \times 0.2) + (3 \times 0.15)$$

$$= 2.45$$

$$= 3 \text{ bits}$$