

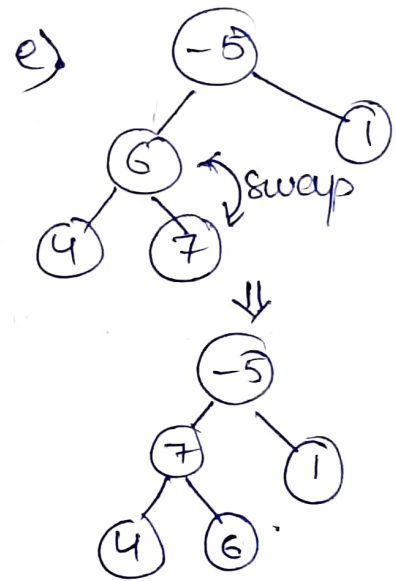
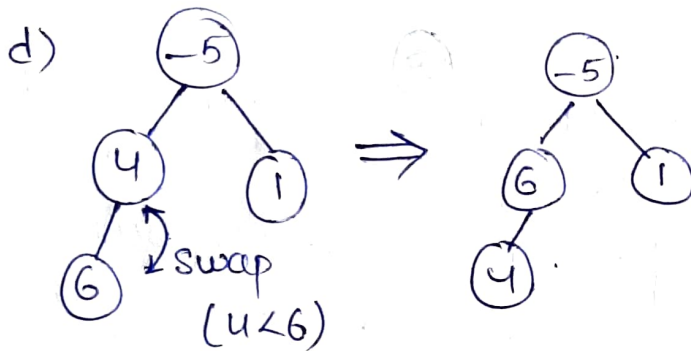
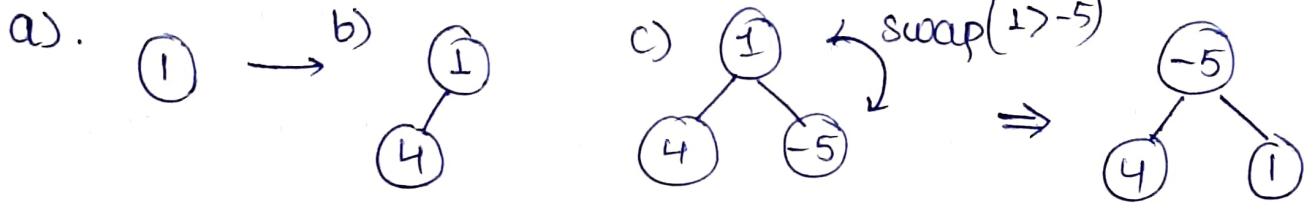
03/03/2021

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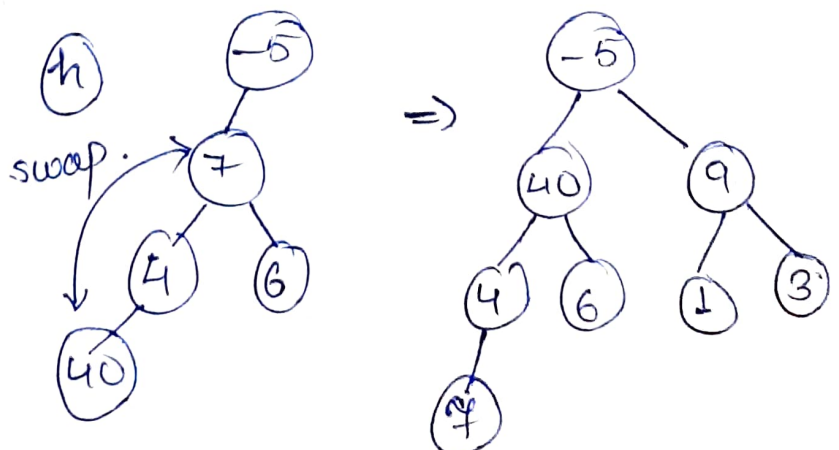
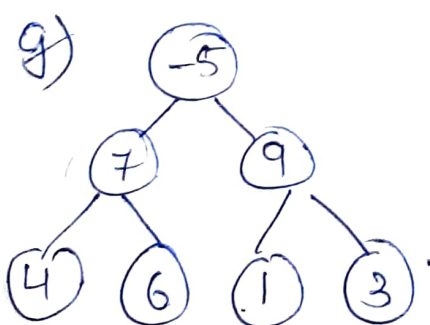
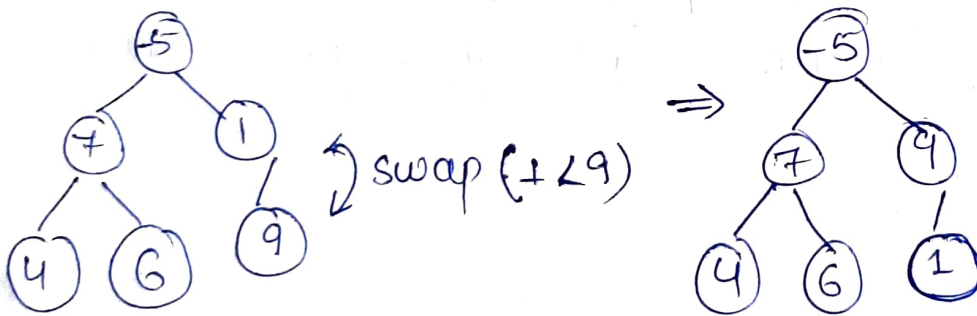
Cycle Test - 1

Rayneesh Pandey

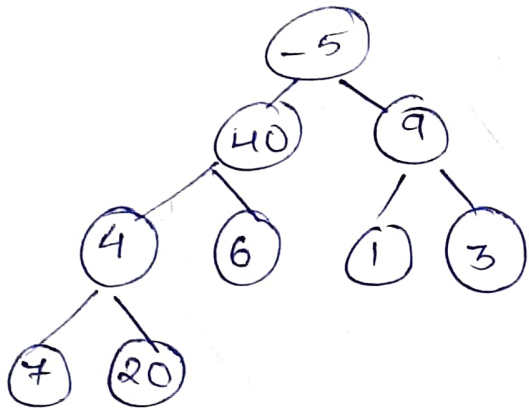
Question 1 Given 1, 4, -5, 6, 7, 9, 3, 40, 20, 70, 100.



f). insert 9:

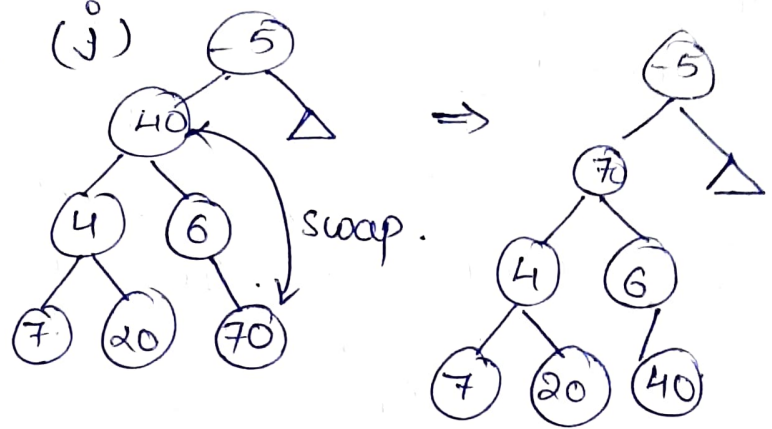


(i) 20.

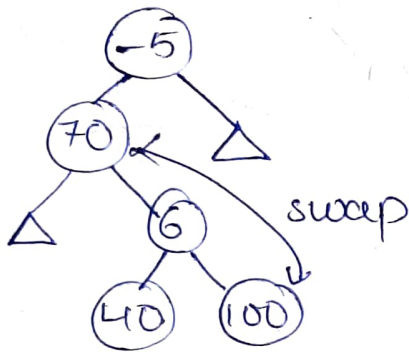


70

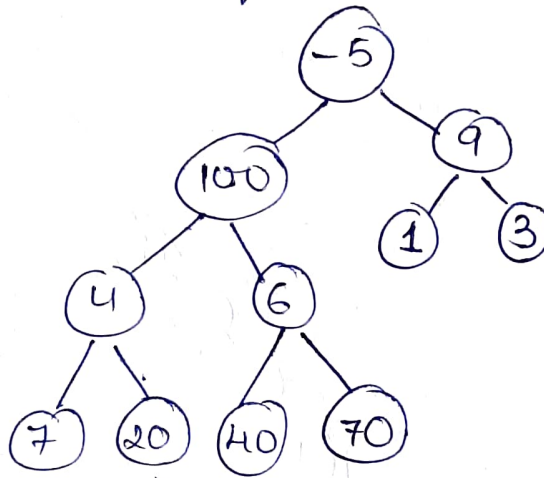
(j)



k) 100.

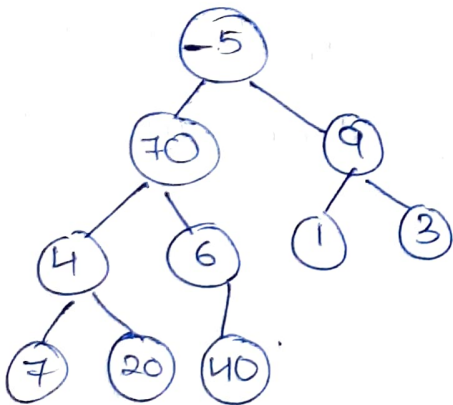


final min-max heap after insertion

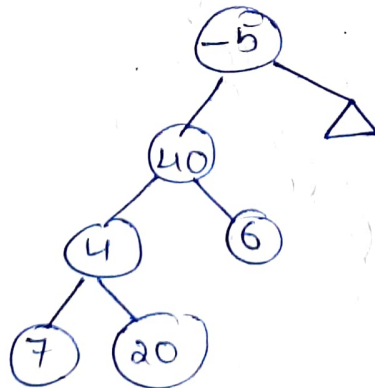


Deletion

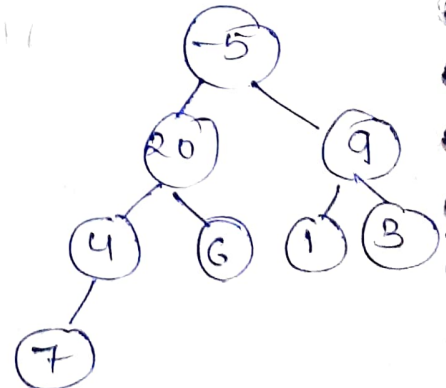
a) 100. (simply delete & replace with last node)



b). 70.



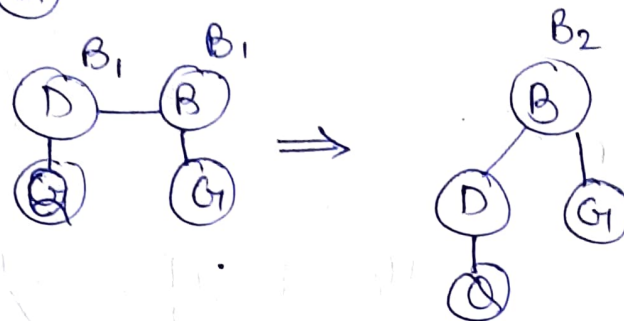
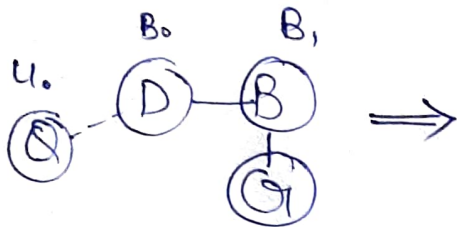
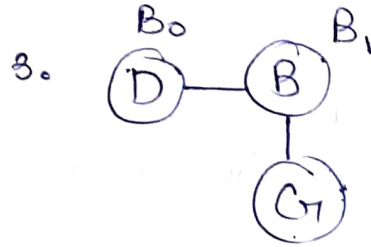
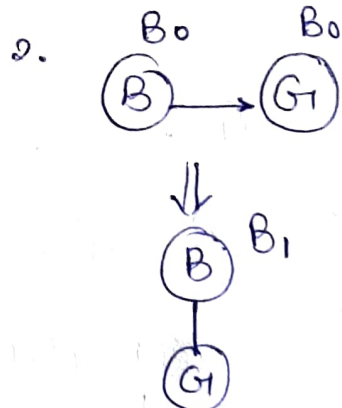
c) 40.



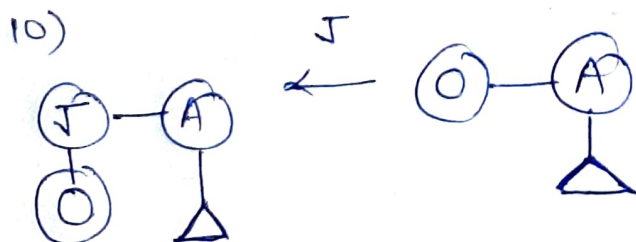
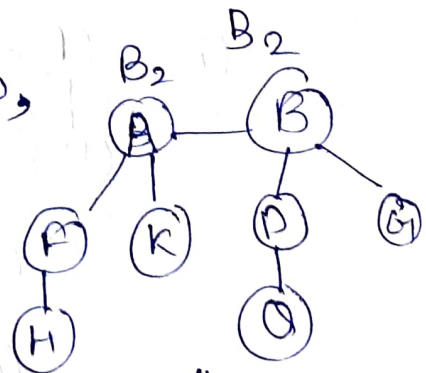
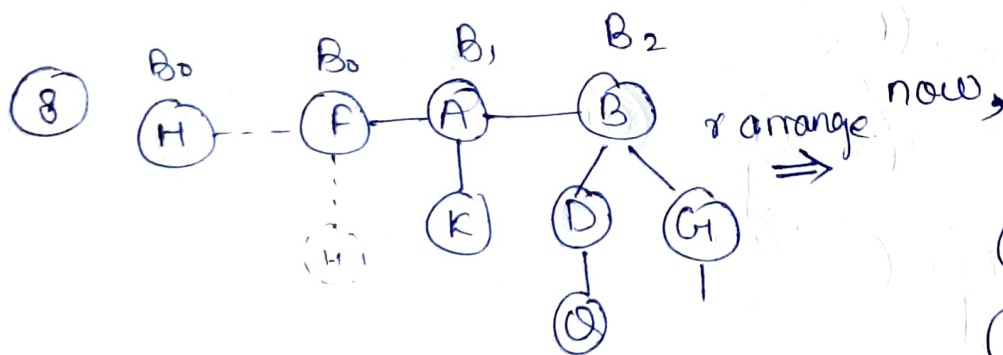
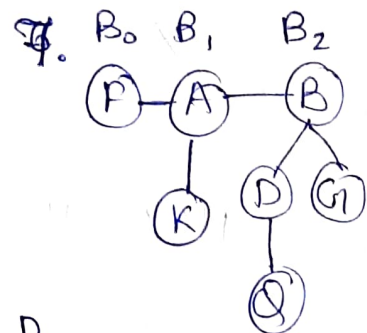
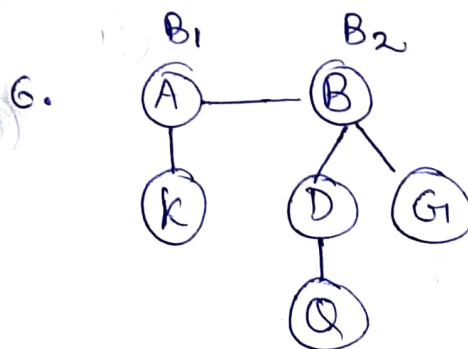
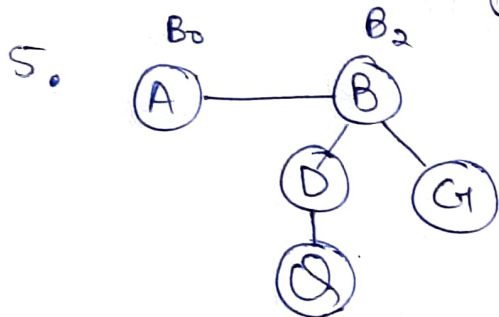
Final min-max heap after deletion

Question (2)

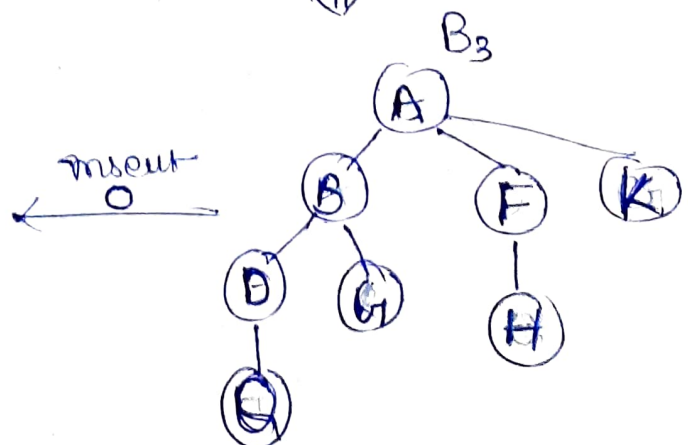
Given
Insertion : G, B, D, E, A, K, F, H, O, J, T and E



satisfying Binomial property

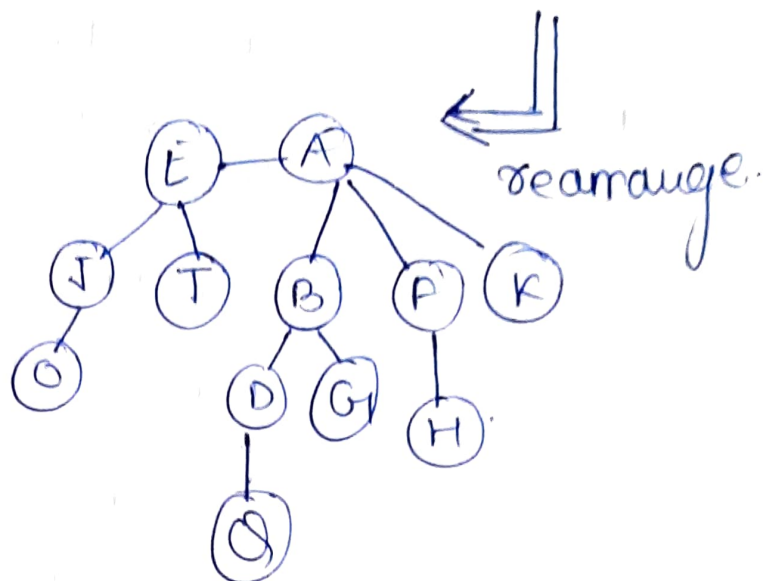


(9)

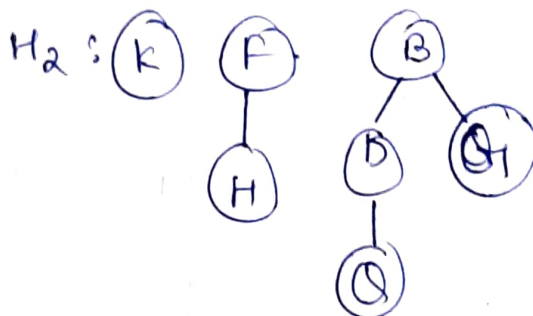
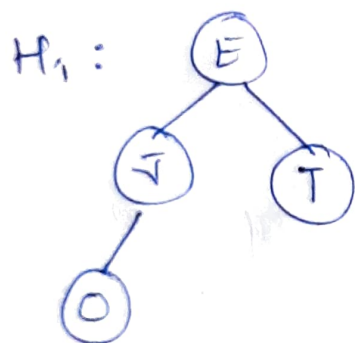




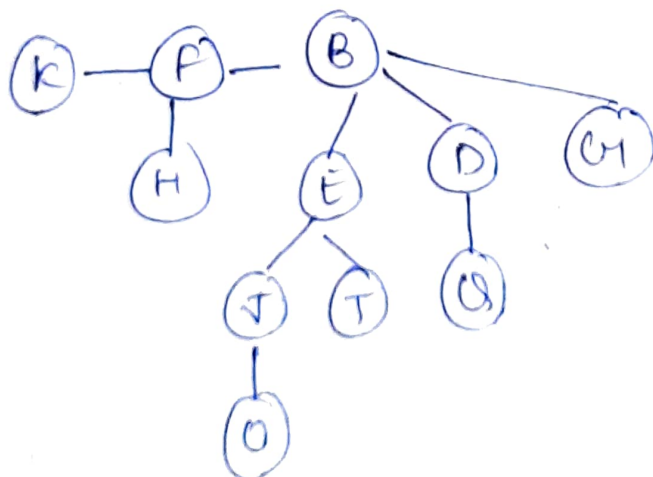
Binomial Heap
after insertions



Extract Min:



Now $H_1 \cup H_2$

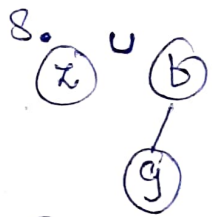
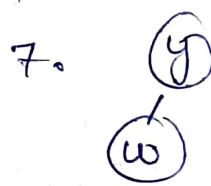
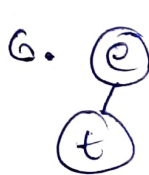
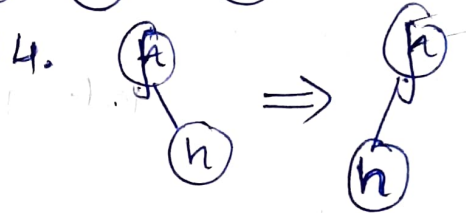
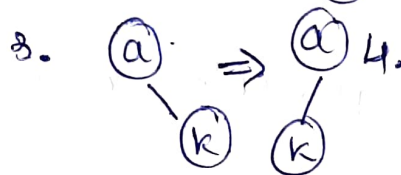
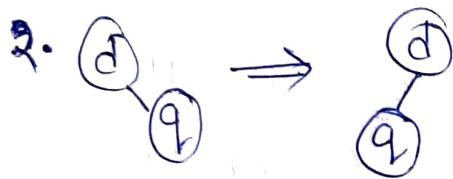
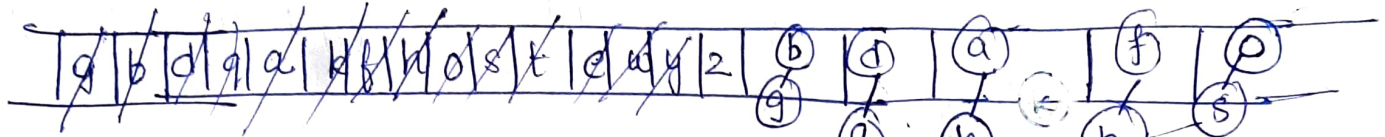
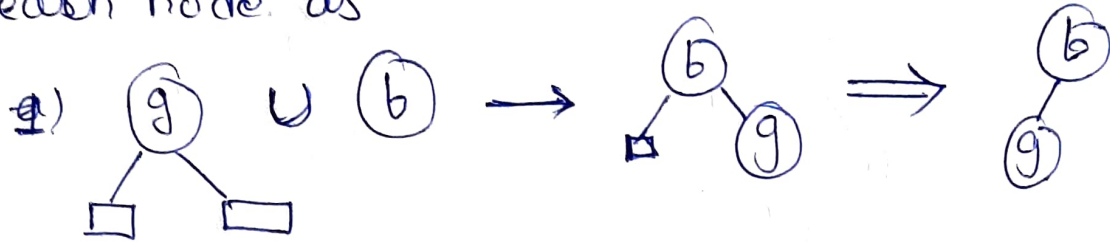


Question (4)

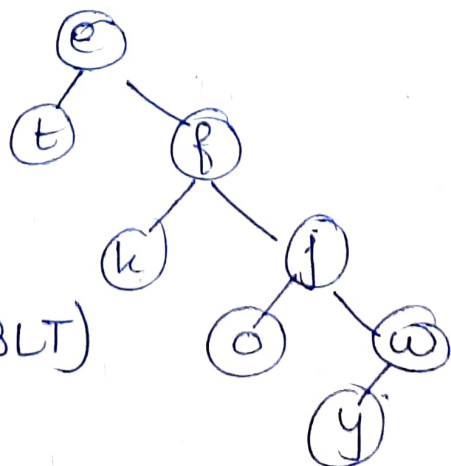
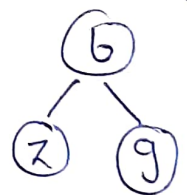
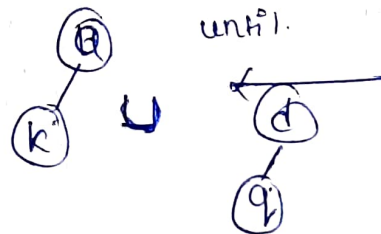
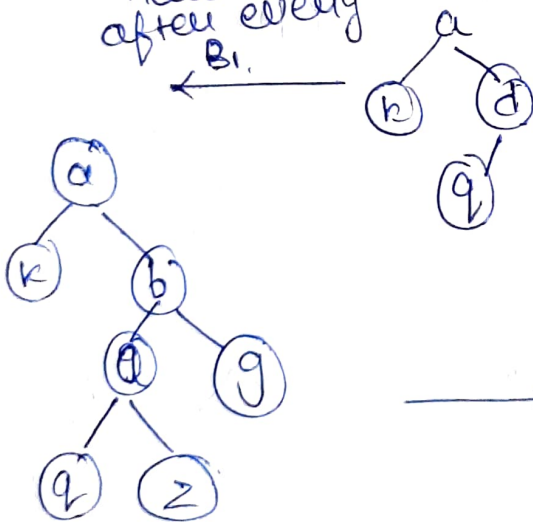
g, b, d, q, a, k, f, h, o, s, t, e, w, y, z

min HBLT with only root node.

each node as

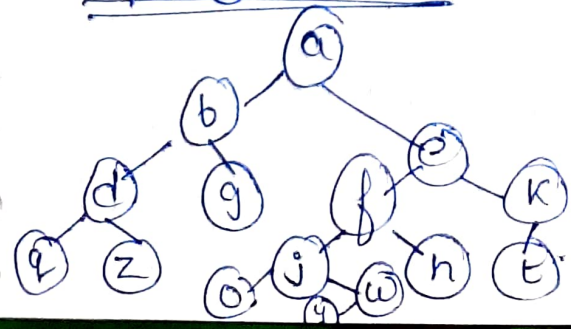


now after every B₁



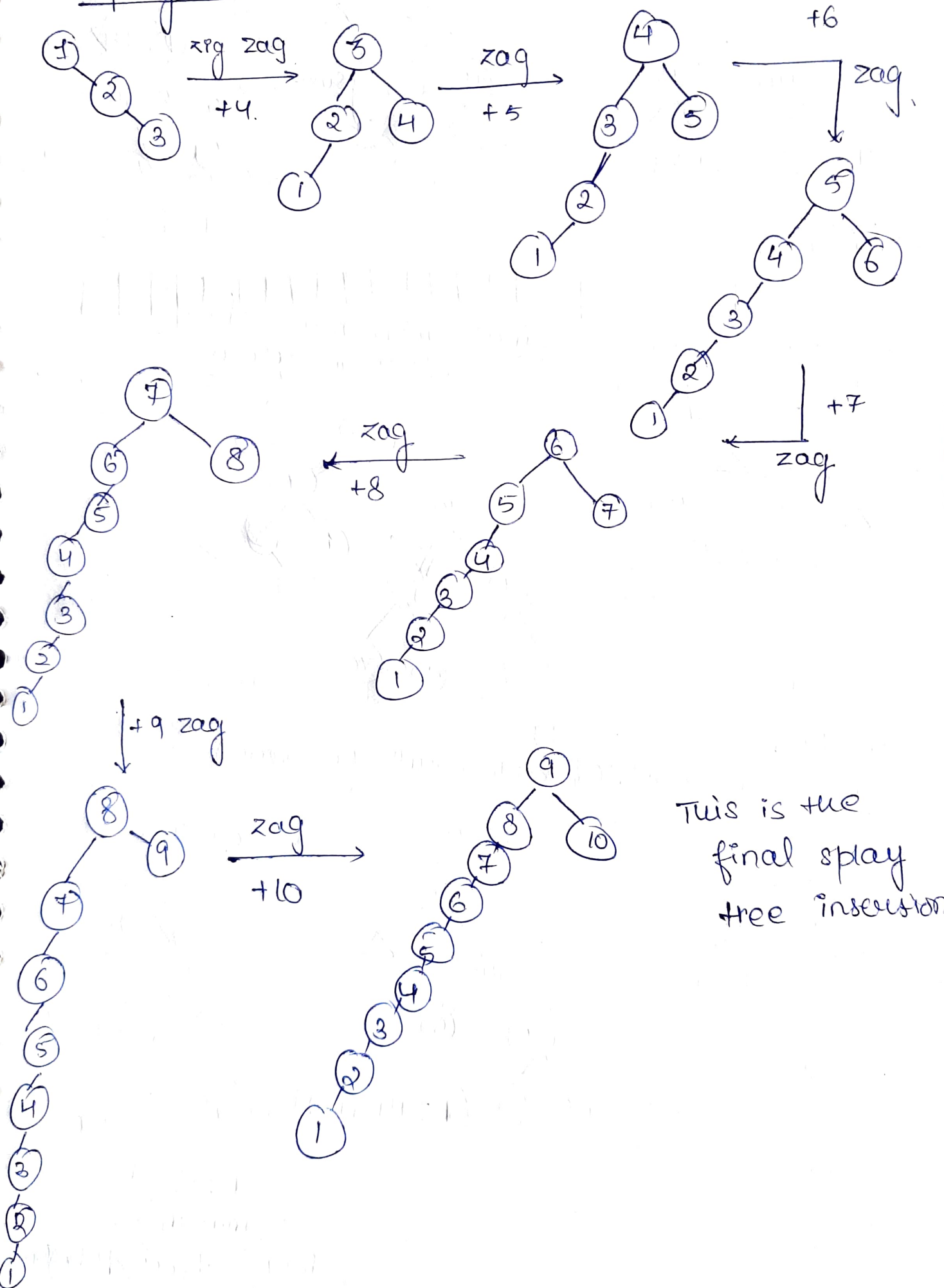
now

Final tree (min HBLT)



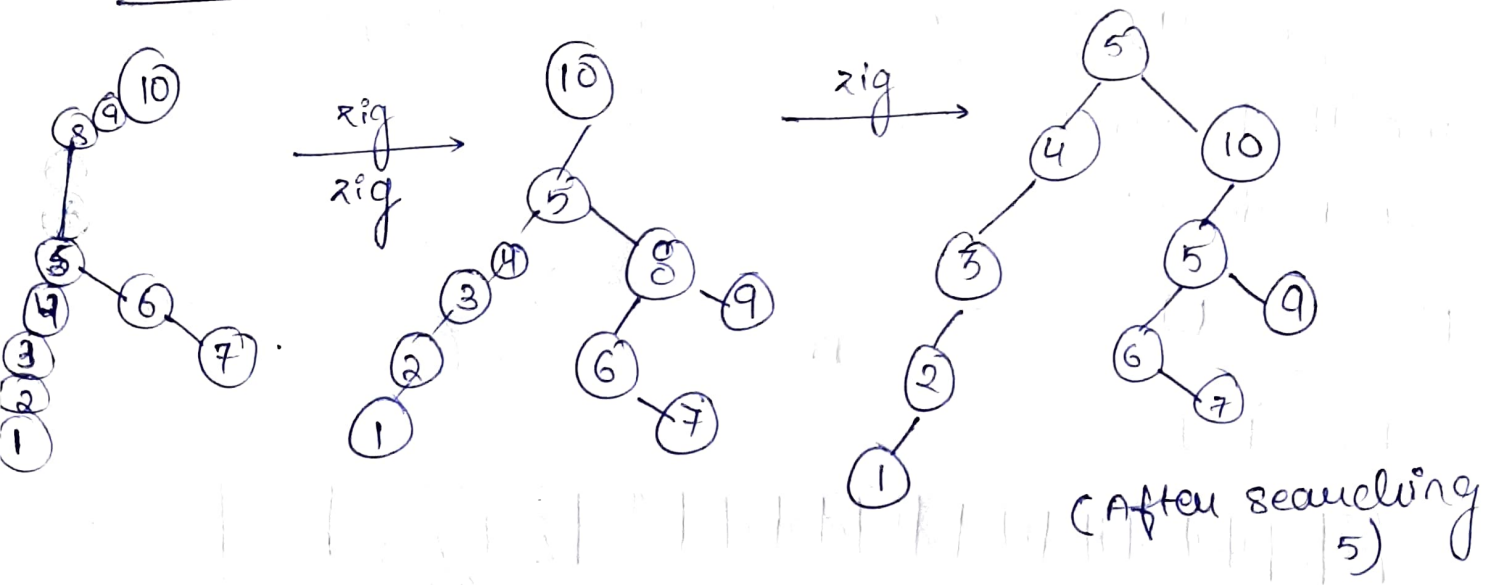
Question (6)

splay tree:



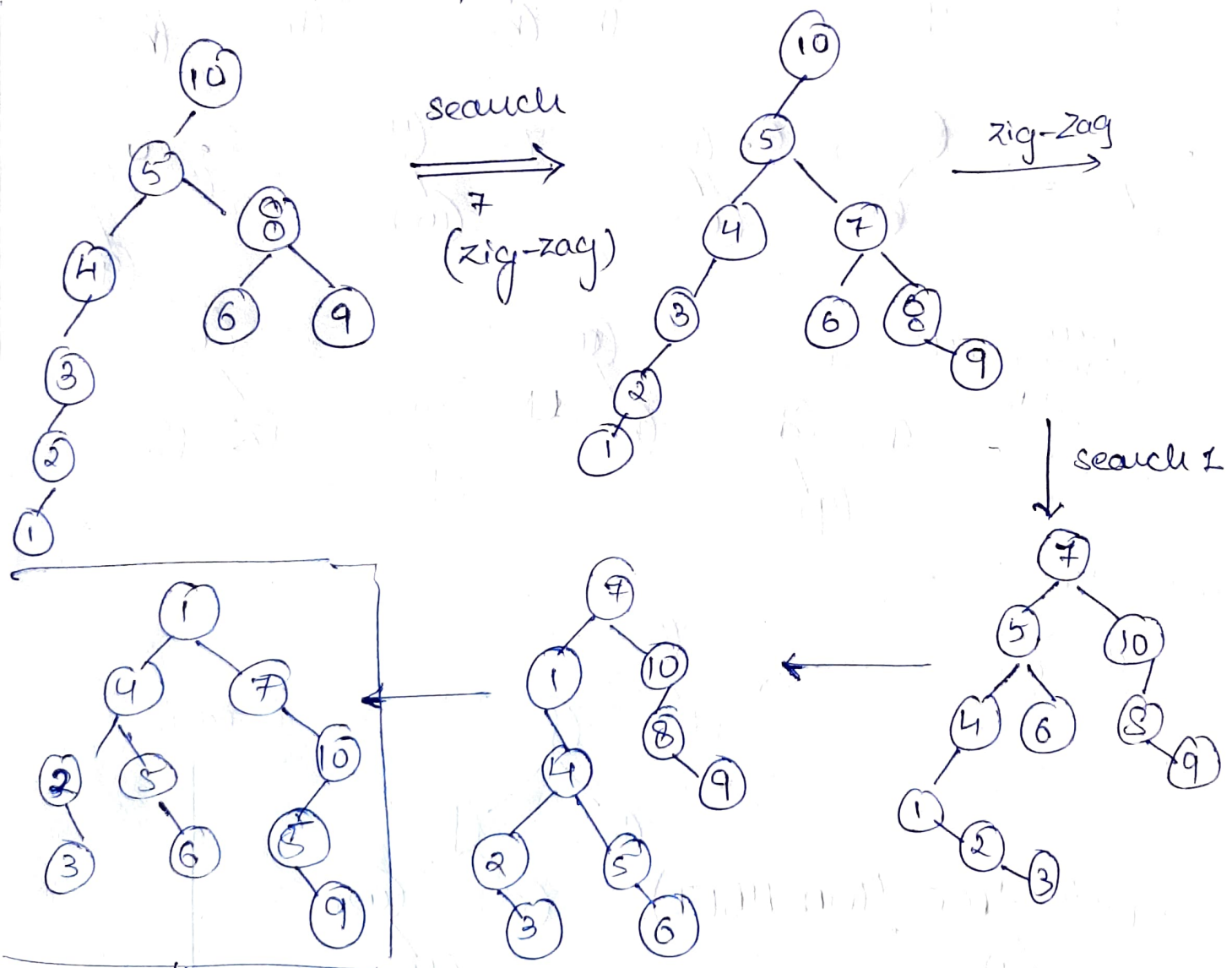
This is the final splay tree insertion

Search (5)



Search 11:

Not present, so it will search till 10



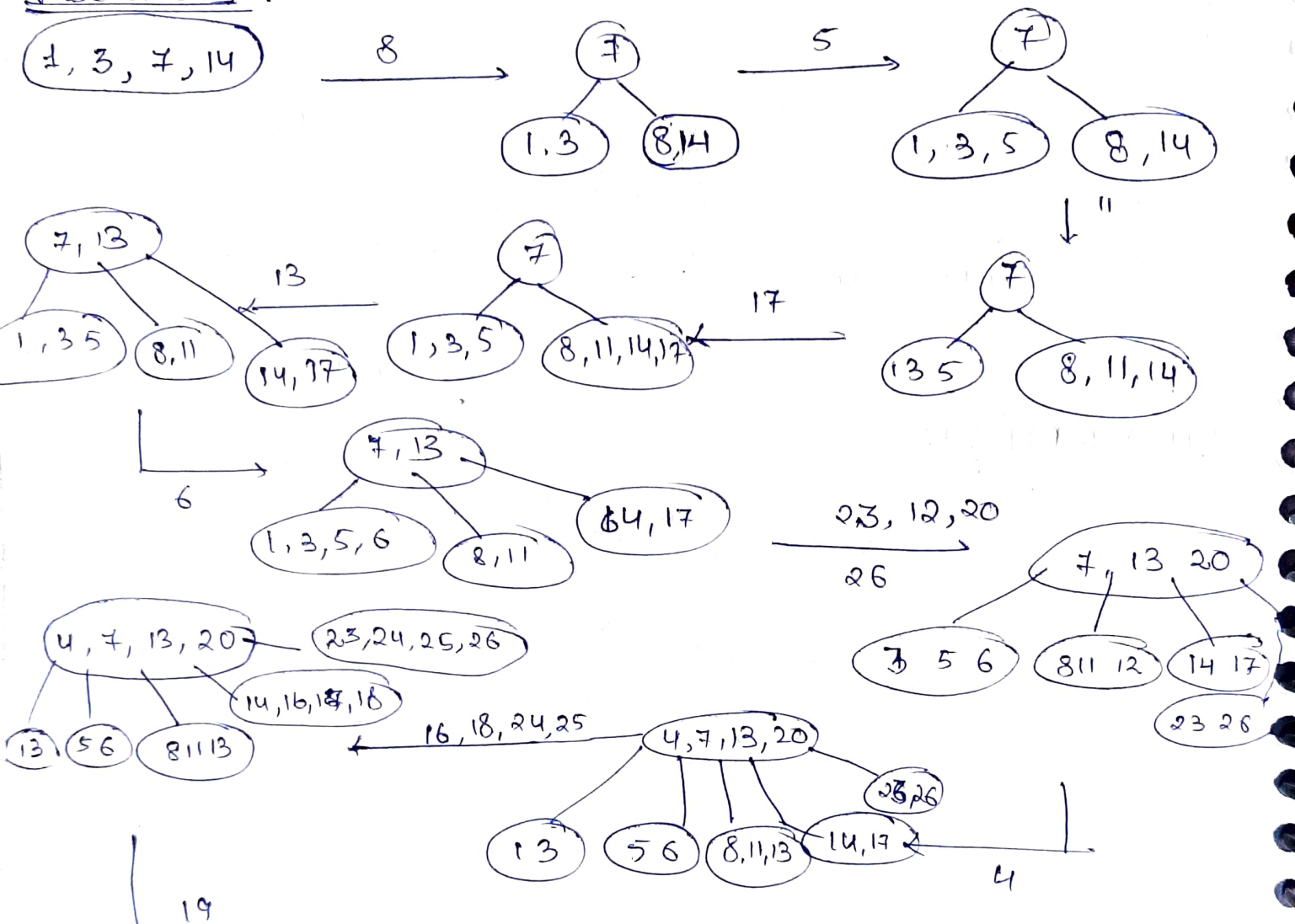
Question 7

B-Tree of order 5:

3, 14, 7, 1, 8, 5, 11, 17, 13, 6, 23, 12, 20, 26, 4, 16.

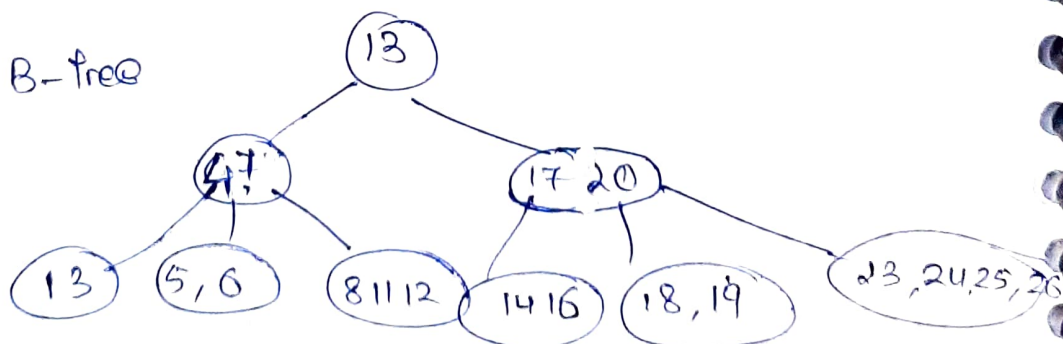
18, 24, 25, 19.

Insertion:



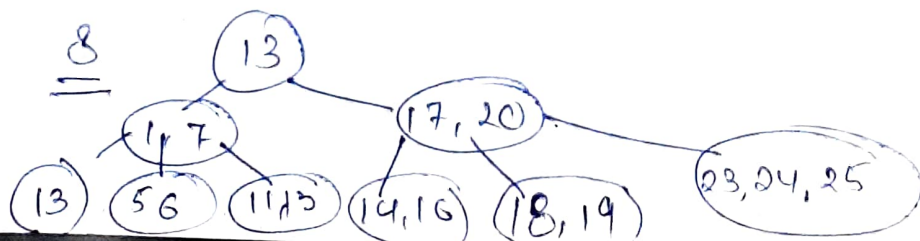
19

Final B-tree

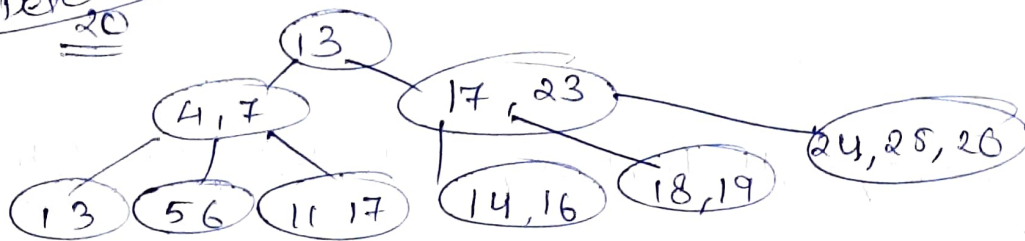


Deletion

8, 20, 18, 5.

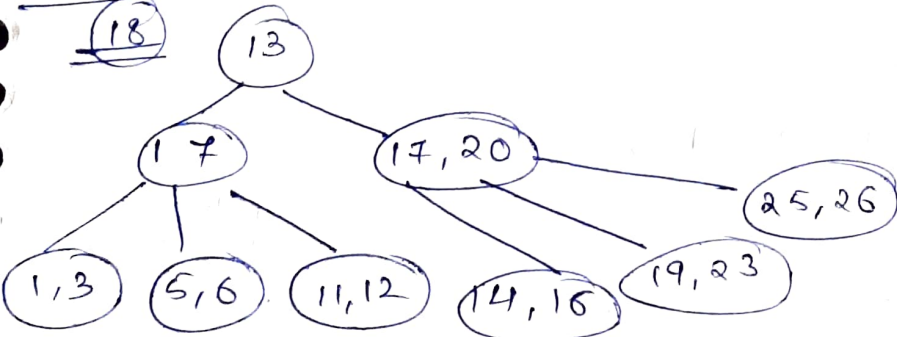


Delete
20



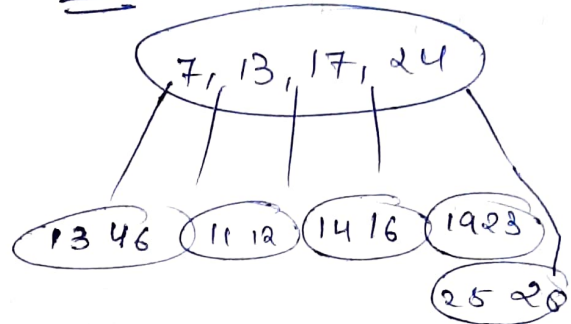
Delete

18

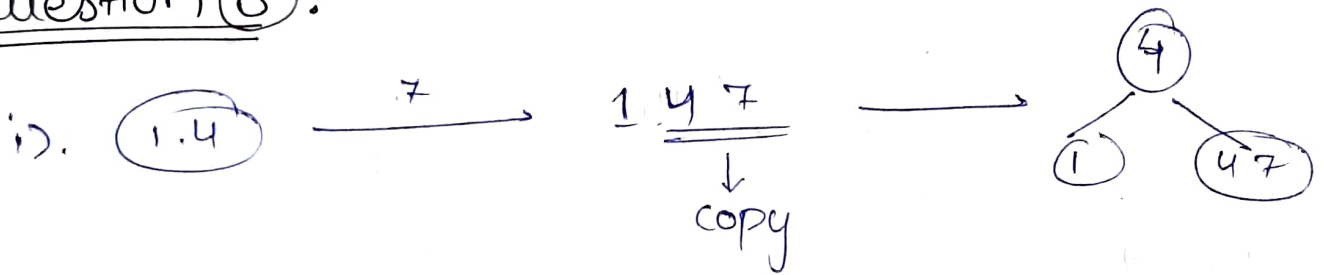


Delete

5

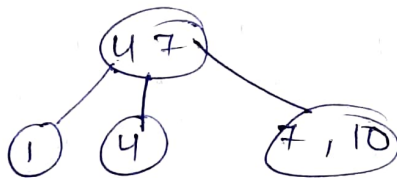


Question (8):



(ii) insert 10

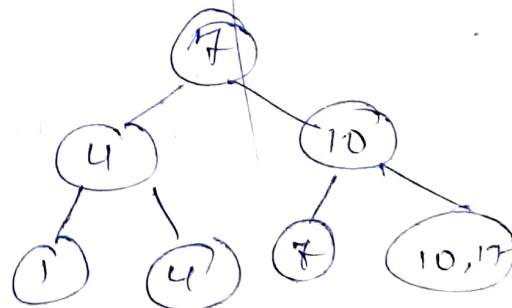
$\begin{matrix} 4 & \underline{7} & 5 \end{matrix}$



(iii) insert 17

$\begin{matrix} 7, 10, 17 \\ \downarrow \text{copy 10} \end{matrix}$

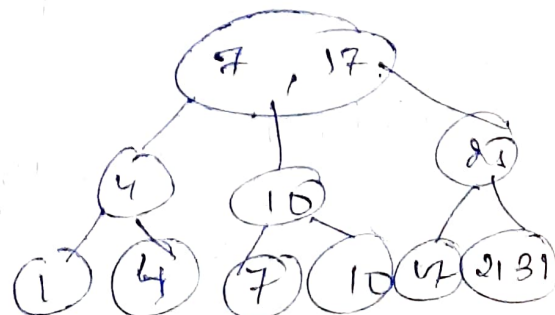
$\begin{matrix} 4, 7, 10 \\ \downarrow \text{move 7} \end{matrix}$



(iv) insert (31)

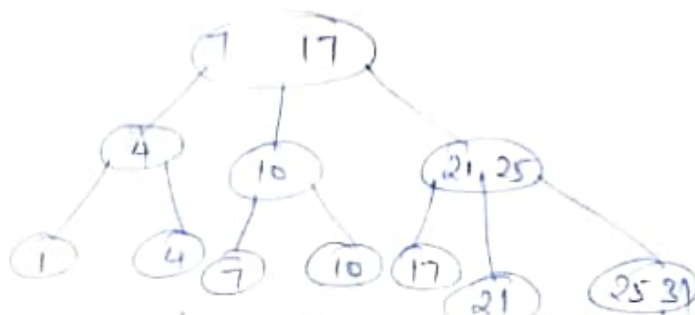
$\begin{matrix} 17, 21, 31 \\ \downarrow \text{copy 21} \end{matrix}$

$\begin{matrix} 10, 17, 21 \\ \downarrow \text{move 17} \end{matrix}$



v) insert 25

21 25 31
↓
copy 25

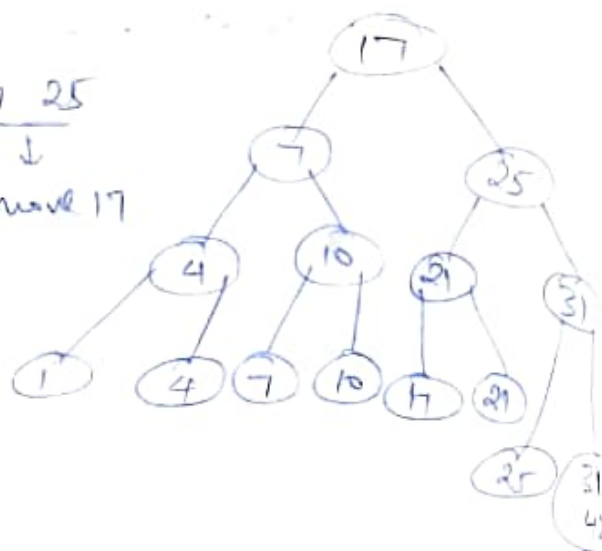


vii) insert 42

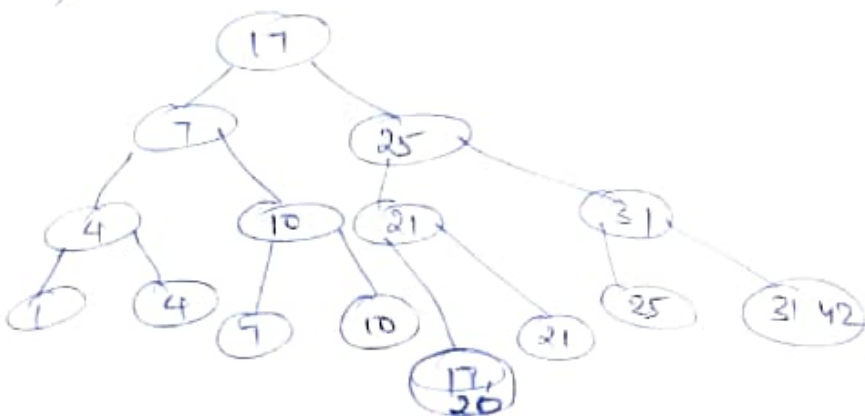
25 31 42
↓
copy 31

21 25 31
↓
move 25

7 17 25
↓
move 17



viii) insert 20



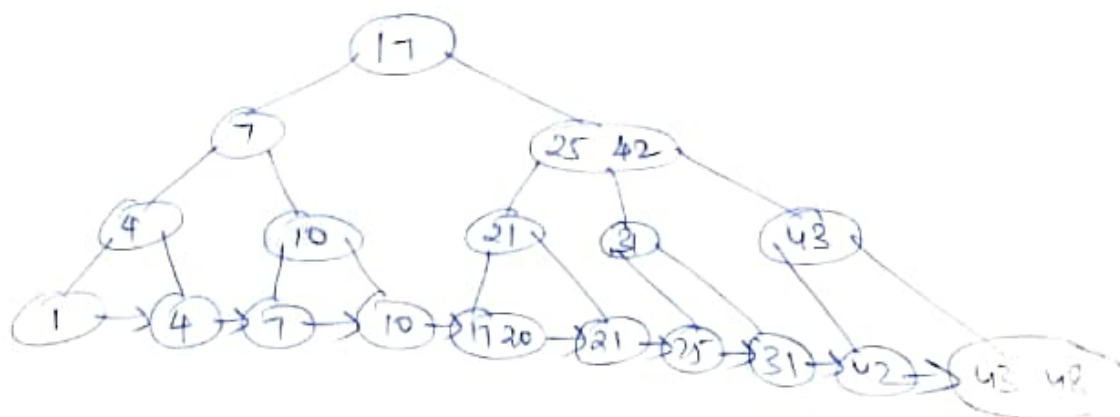
ix) insert 43

, insert 48

31 42 43
↓
copy 42

42 43 48
↓
copy 43

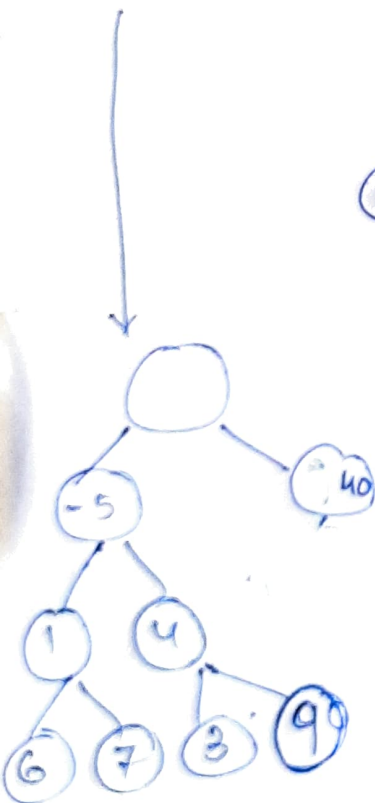
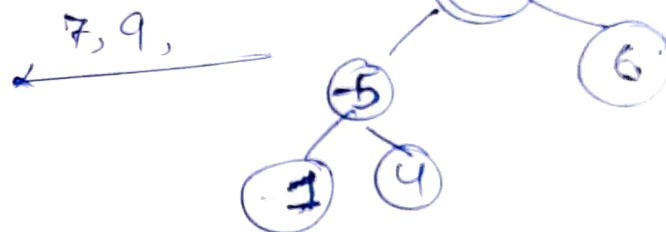
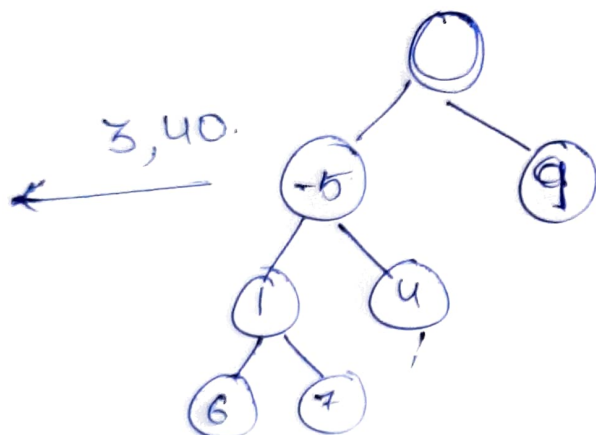
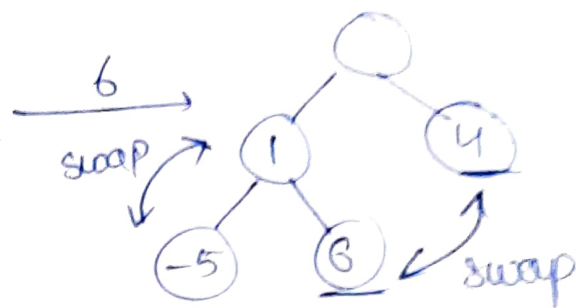
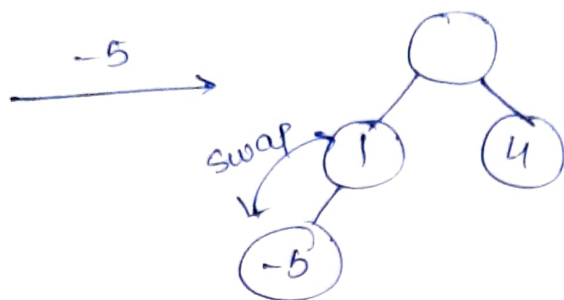
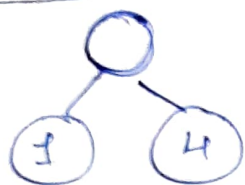
31 42 48
↓
move 42



Question 5

1, 4, -5, 6, 7, 9, 3, 40, 20, 70, 100

Insertion:



20, 70, 100

