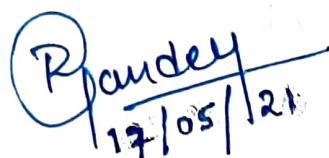


Declaration and statement of authorship

I, bearing Registration Number 106119100, agree and acknowledge that:

1. The assessment was answered by me as per the instructions applicable to each assessment, and that I have not resorted to any unfair means to deliberately improve my performance.
2. I have neither impersonated anyone, nor have I been impersonated by any person for the purpose of assessments.

Signature of the Student :


17/05/21

Full Name : RAJNEESH PANDEY

Roll No. : 106119100

Sub Code : CSPE43

Mobile No. : 8290968008

Instructions:

Do not include this in the declaration

1. Either print the declaration or
Write in hand on a separate sheet of paper with
 - ✓ Write your Registration Number (Roll No.)
 - ✓ Sign against Signature of the Student with date
 - ✓ Full Name (in Capital Letters)
 - ✓ Roll Number
 - ✓ Sub Code
 - ✓ Mobile Number
2. Scan the document and save it in PDF format
3. Upload along with the Answer Sheet as first page.
4. Without this declaration, the answer sheet will not be evaluated.

END SEM

106119100

CSPE - U3

Rajneesh
Pandey

Input strings

length 15 : RAJNEESH PANDEY R

(length 10 : RAJNEESH PA)

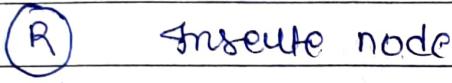
length 6 : RAJNEE

length 6 : 18 11 01 4 5 5

Question ①

I/P string : "RAJNEESH PANDEY R"

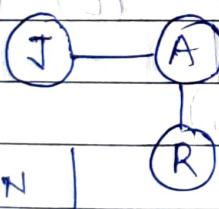
Step 1 :



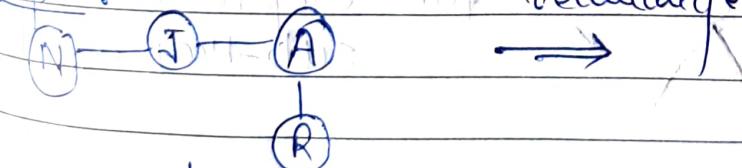
Step 2 :



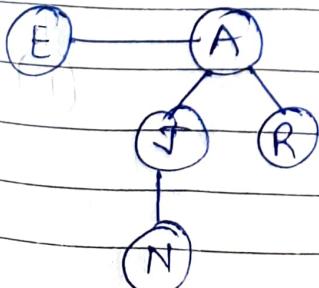
Step 3 :



Step 4 :

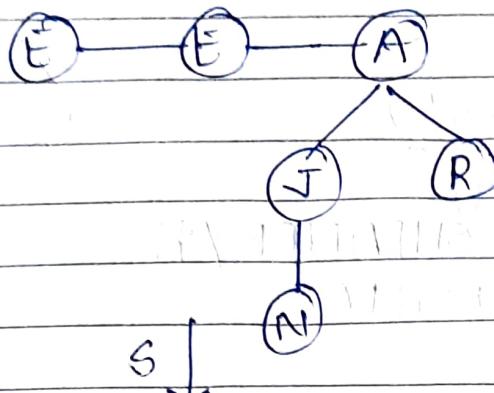


Step 5 :

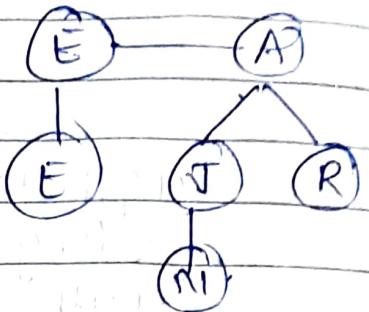


$\downarrow E$

Step 6:

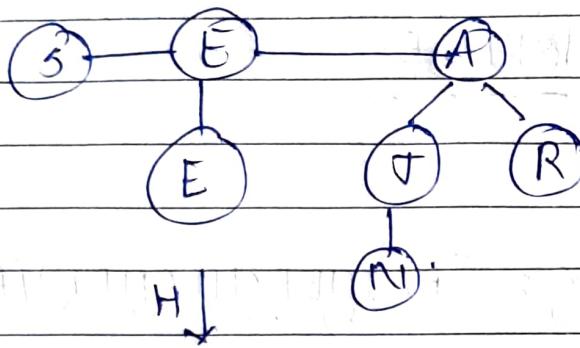


rearrange \Rightarrow



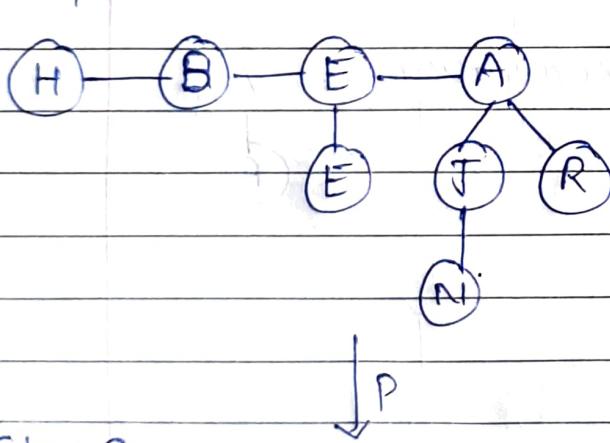
$\downarrow S$

Step 7:

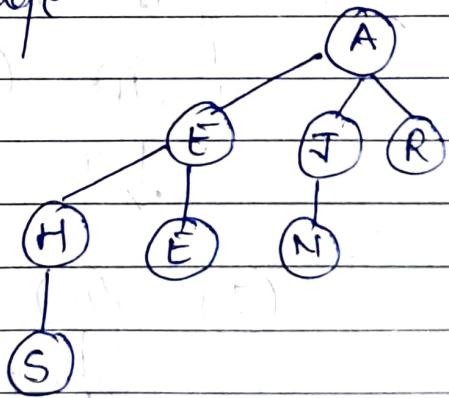


$\downarrow H$

Step 8:

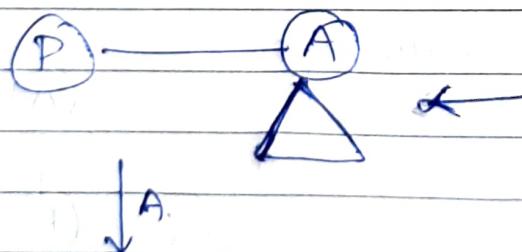


rearrange \Rightarrow



$\downarrow P$

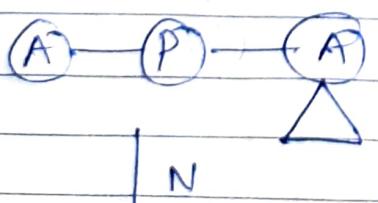
Step 9:



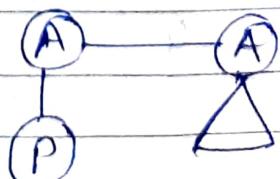
this represent the sub-Heap of A.

$\downarrow A$

Step 10:

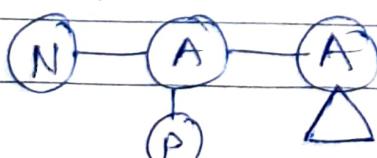


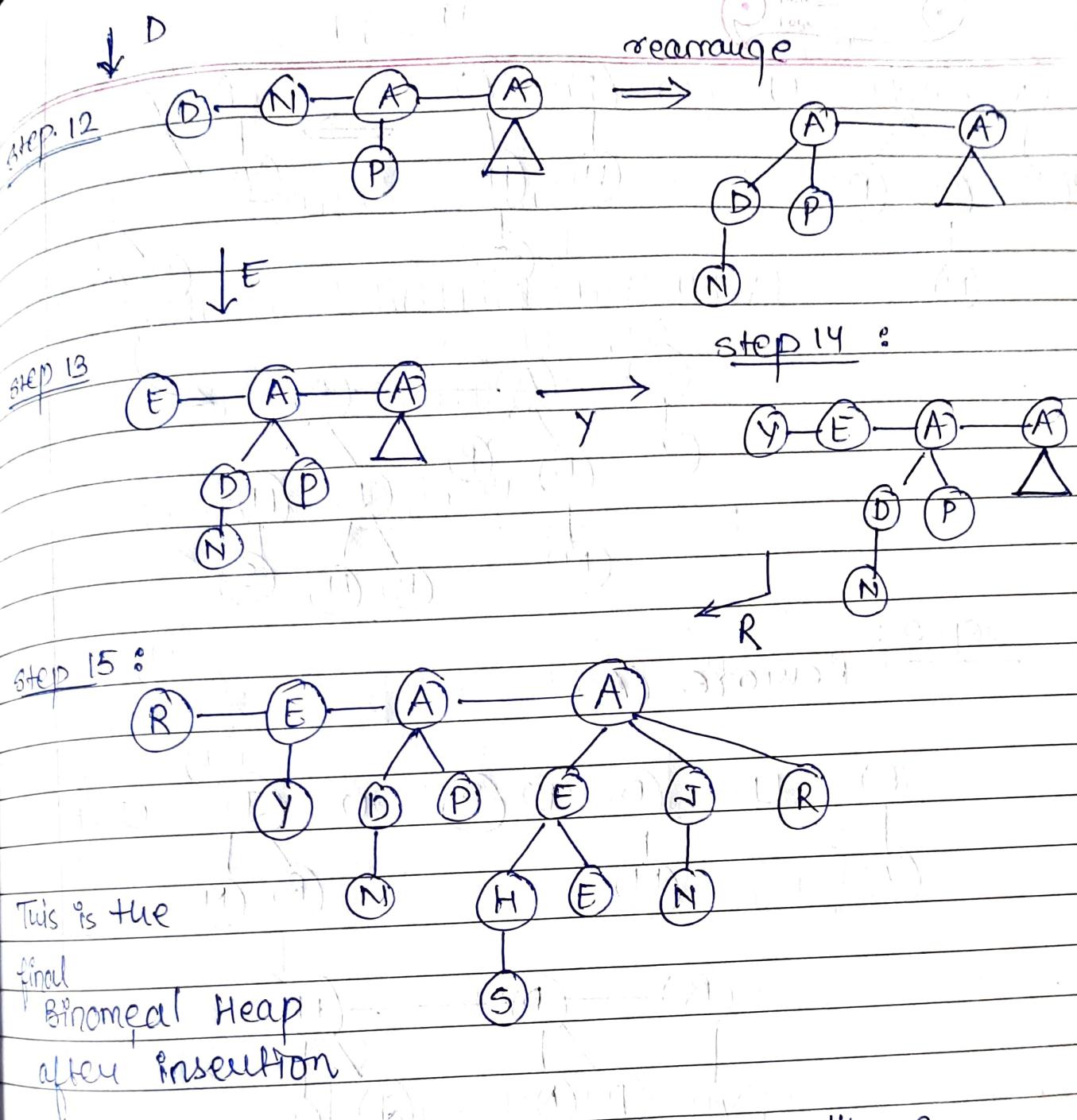
rearrange \Rightarrow



$\downarrow N$

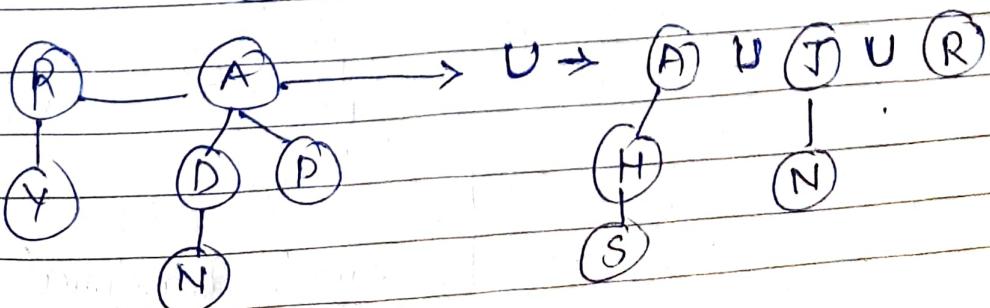
Step 11:

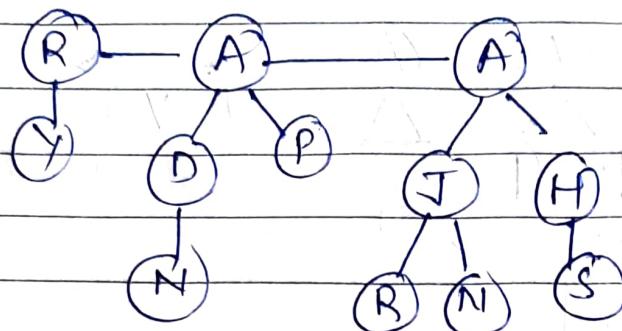
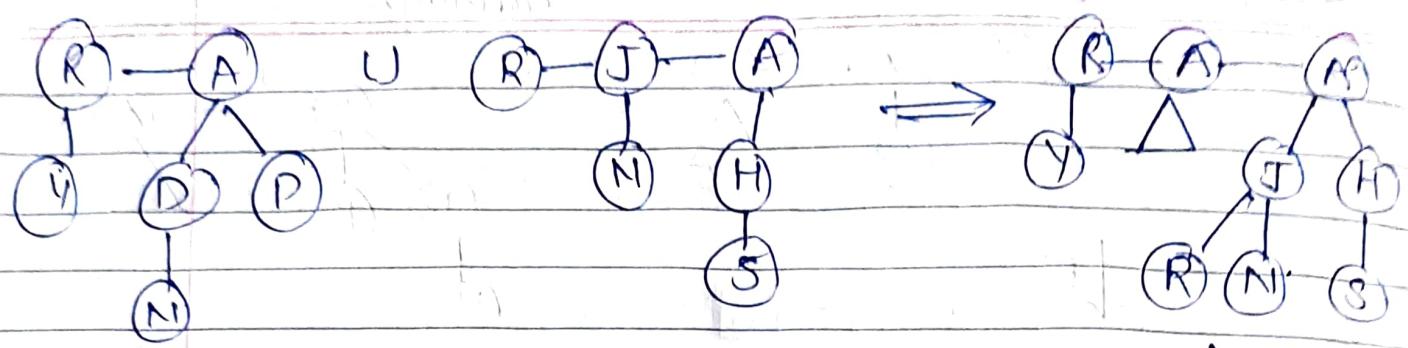




→ Deleting 5th : E , 10th : A 15th : R
character

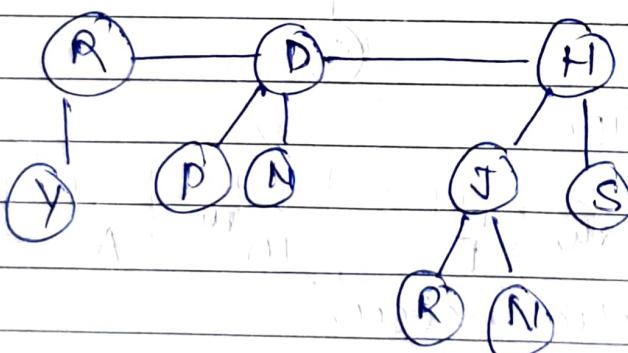
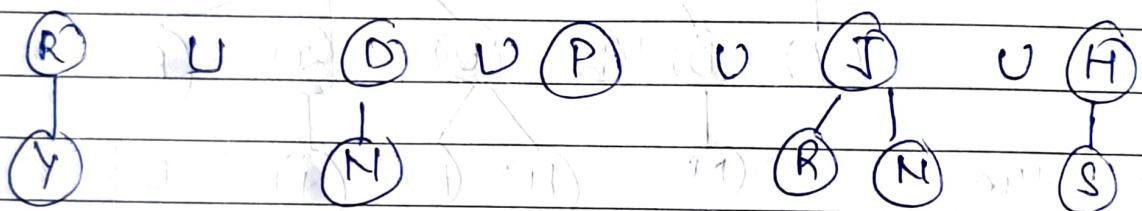
Step 1: make character → min. then rearrange & to make it root then remove
 so, remove, E





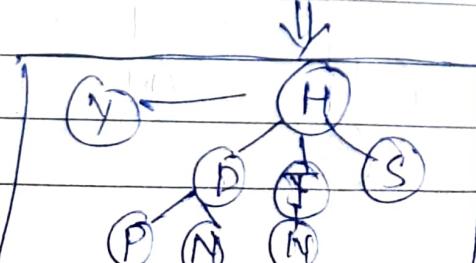
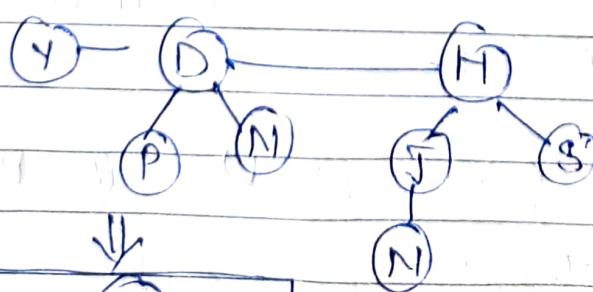
Step 2 :

Remove A



Step 3

Remove R



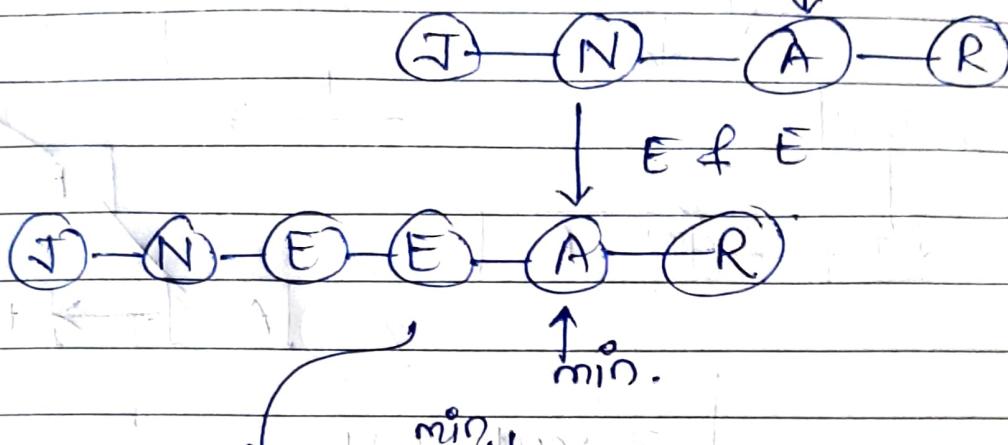
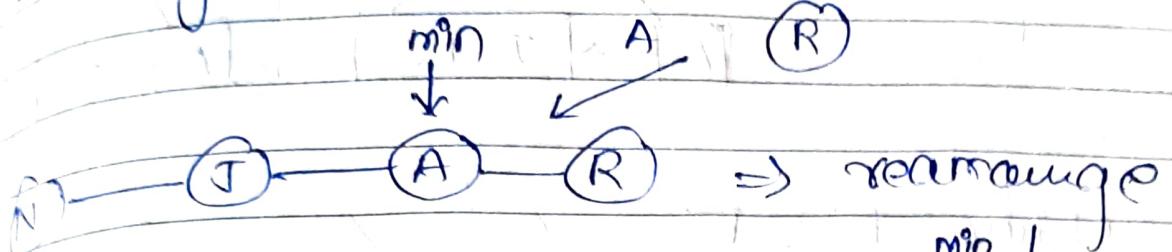
final Binomial Heap
after deletion

Question 2

Fibonacci Heap.

inserting

RAJN's



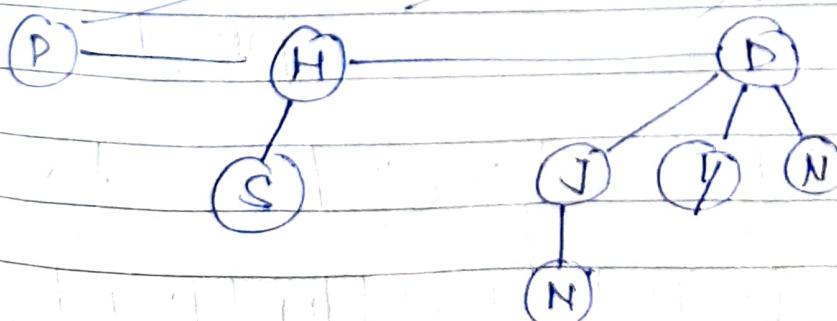
so after all the insertion.

min

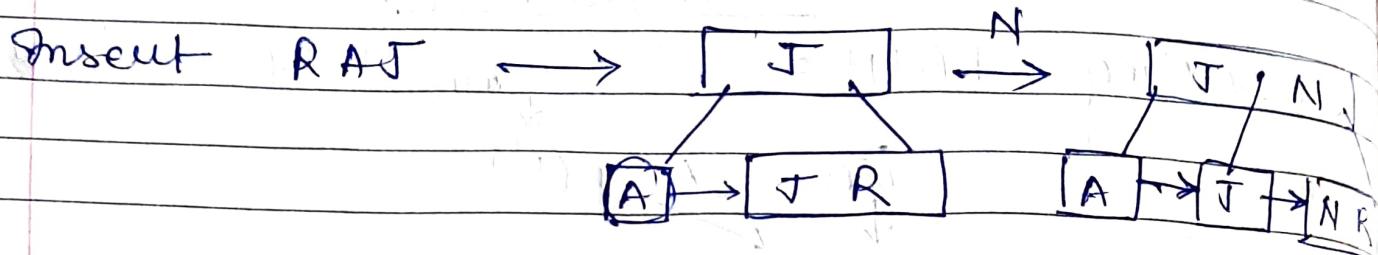


Deleting E, A, R queue for deletion.

we get final Heap as.

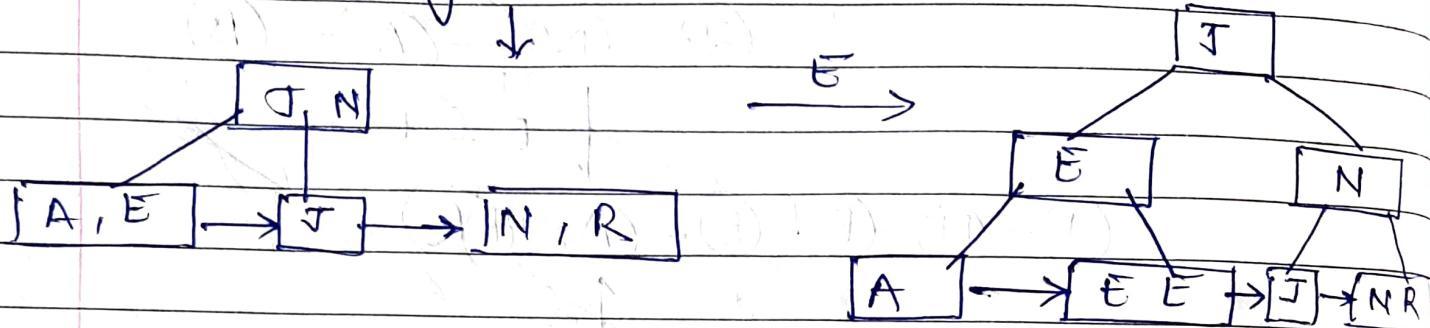


Question 3

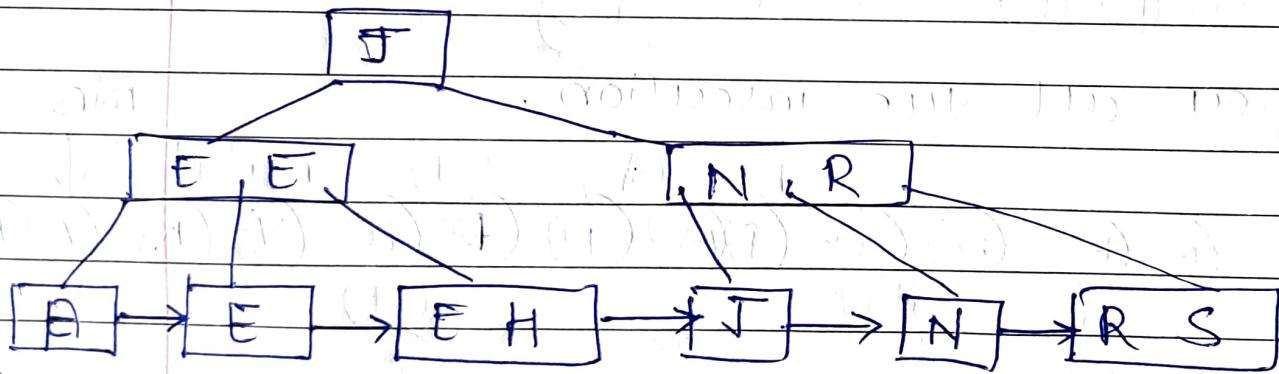


Now

inserting E, B

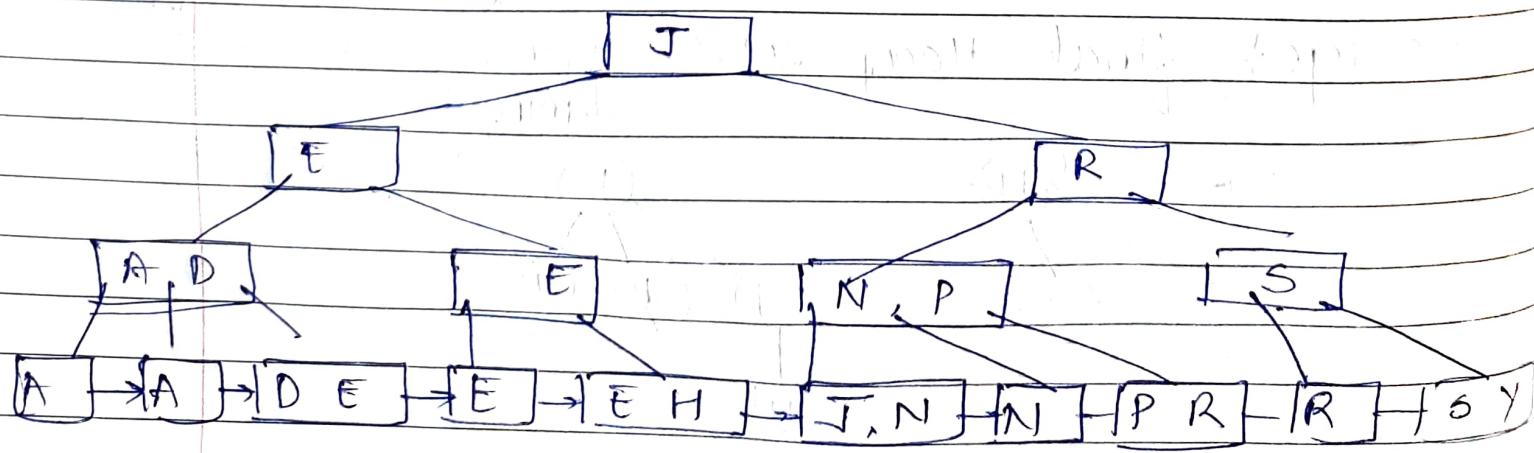


Insert S, H



Now

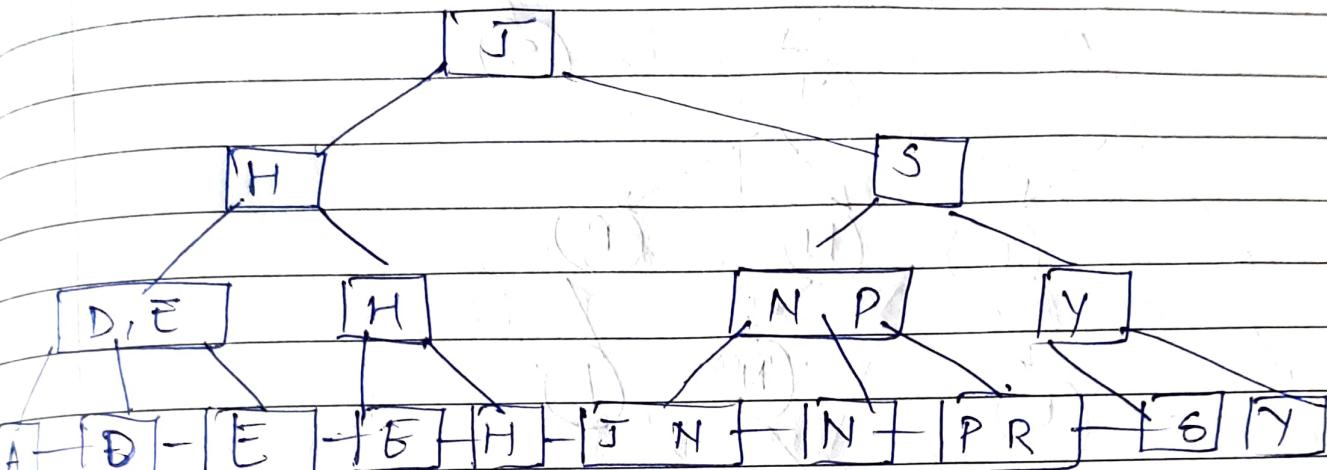
final B+ Tree after all insertion.



Now delete E, A, R

(E) will be remove from non-leaf & so on.

so, final tree after deleting E, A, R from non-leaf and leaf nodes will be

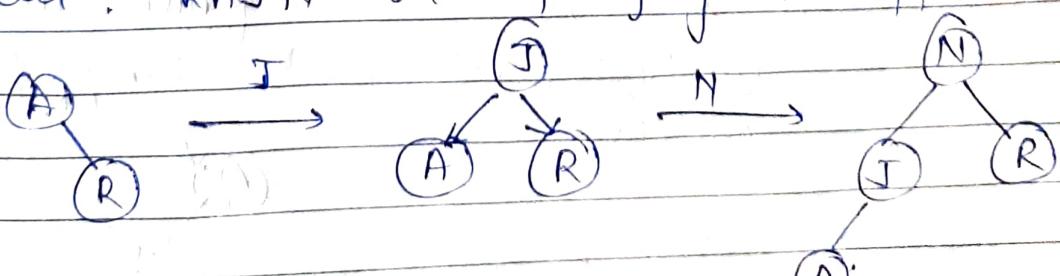


Question (4)

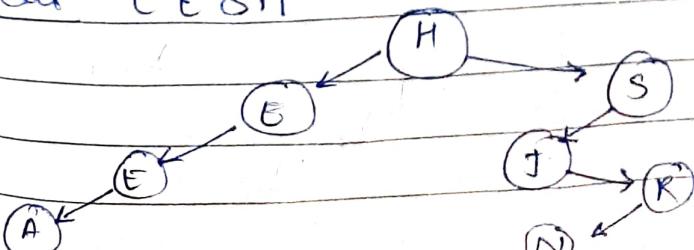
insertion in splay tree

most visited inserted node will be at root

insert: RAJN and splaying is applied.



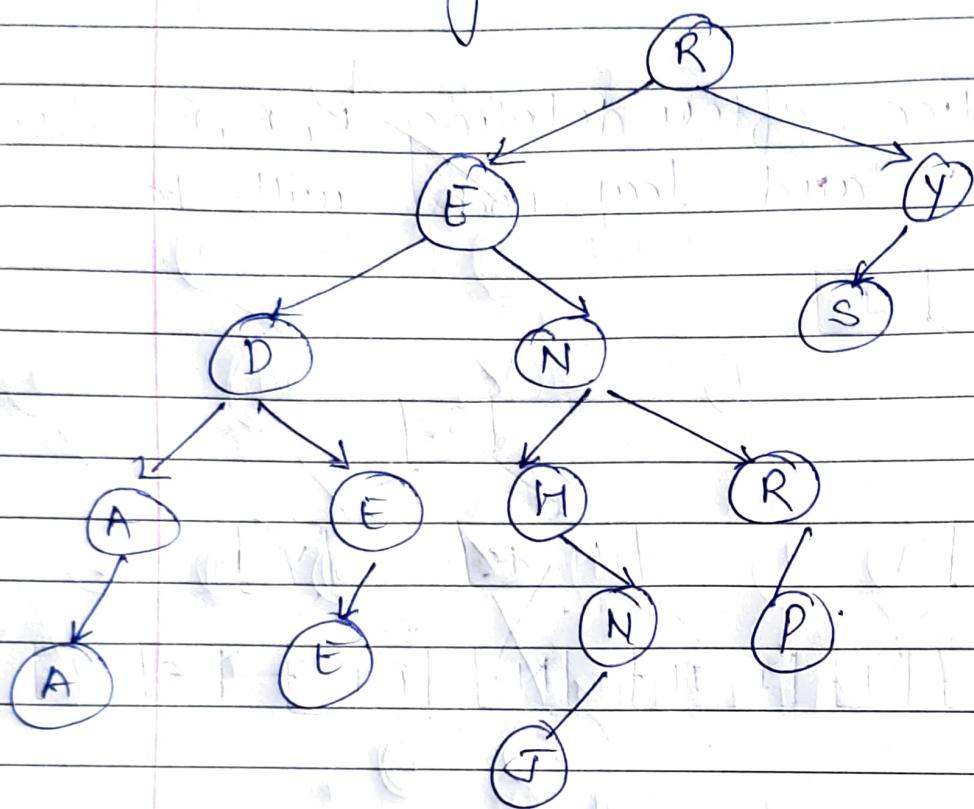
insert EESH



now,

insert "PANDEY R"

final splay Tree.



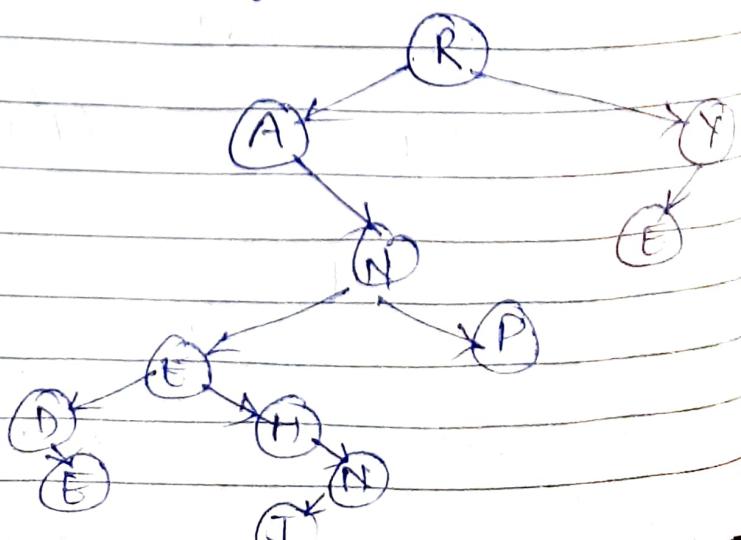
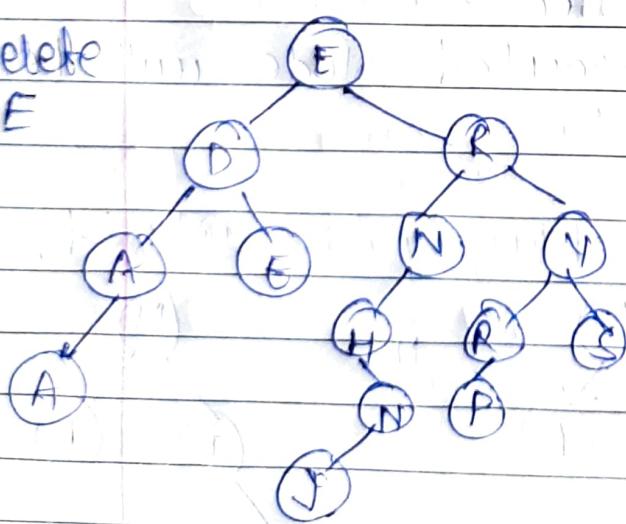
Deletion (E) (A), (R)

Delete E

Delete A, R.

we get

final Tree

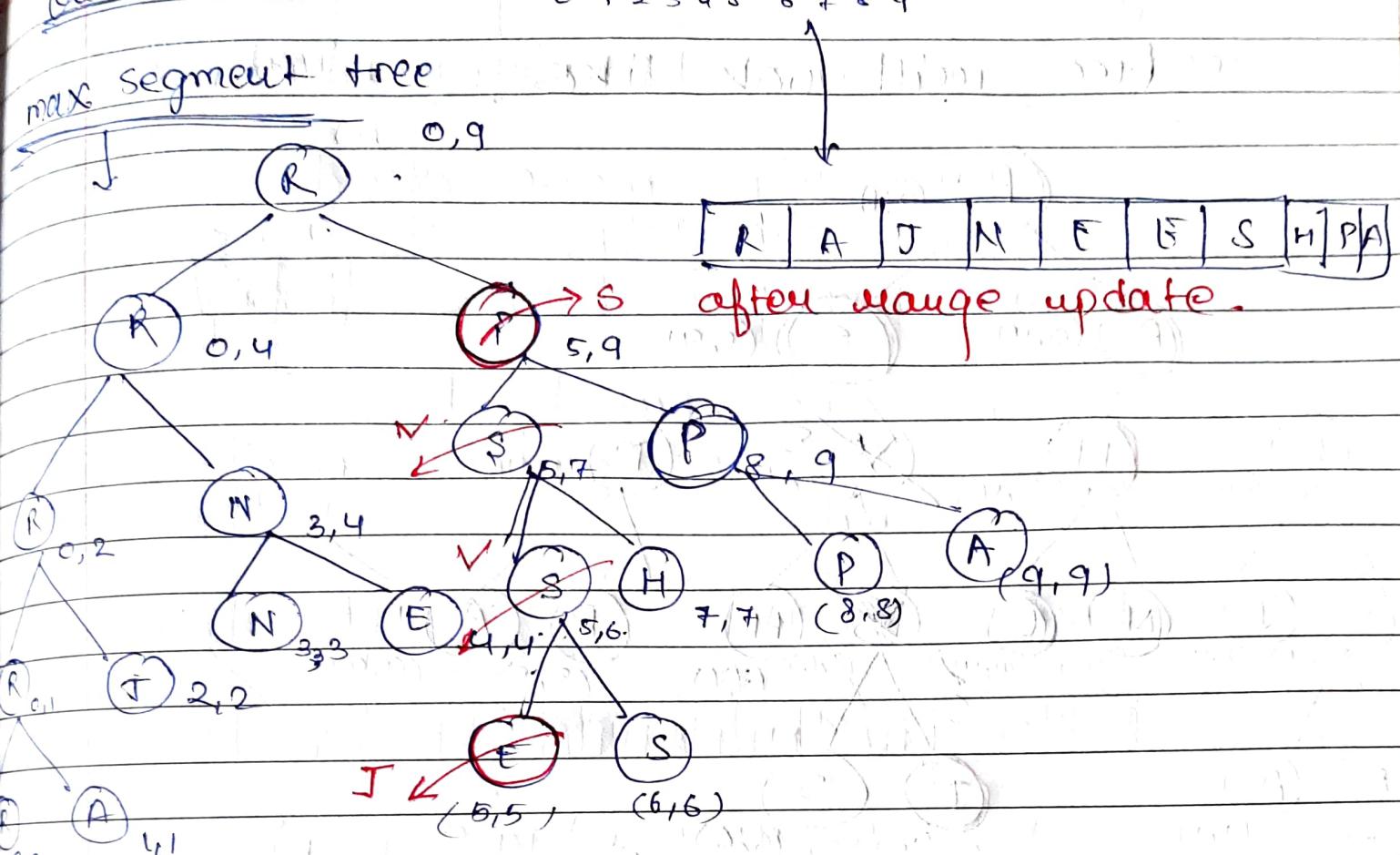


Question (5)

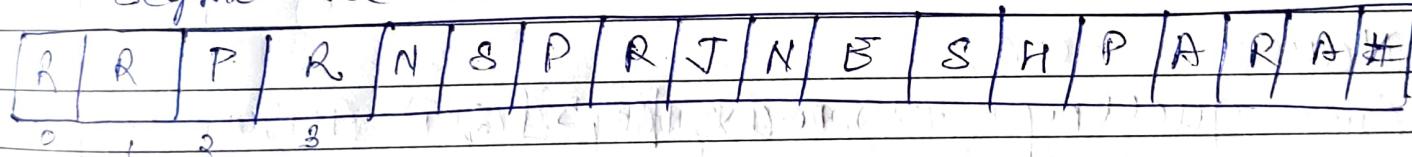
18 1 10 14 5 5 18 8 16 11
0 1 2 3 4 5 6 7 8 9

"RAJNEETSHPA"

max segment tree

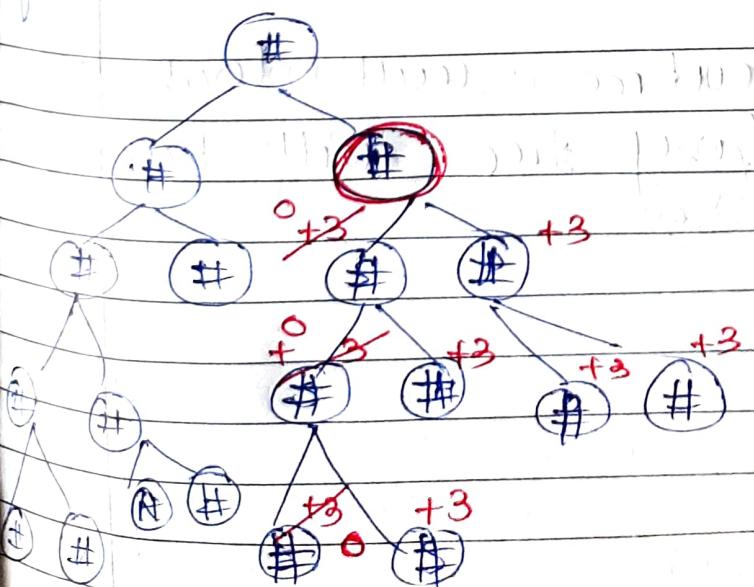


segment tree will look like this in all



for lazy tree

(1) initialized the lazy tree with "#".



(1) Range update

[5,9] by 3

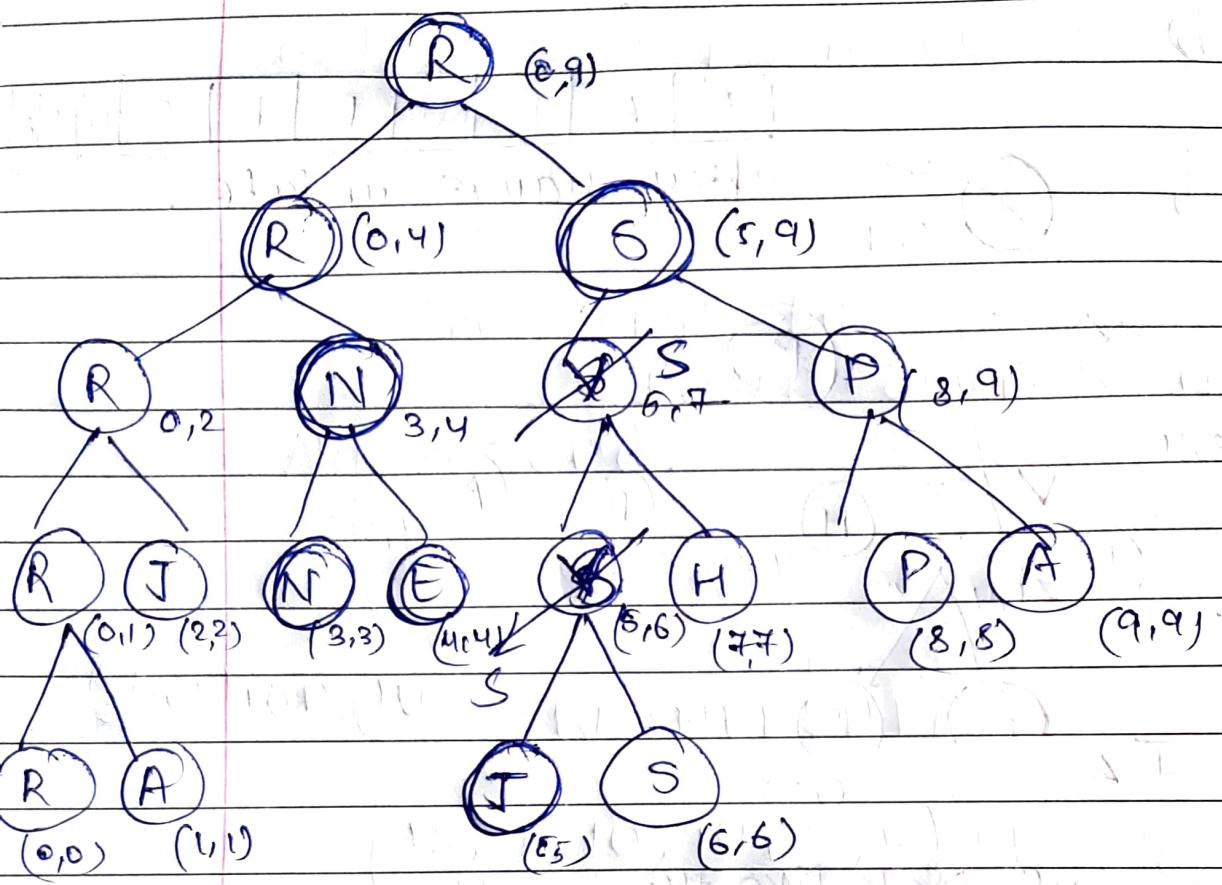
(P) → S

(2) Range update

[5,5] by 2

(E) → T

after both the range update
segtree will look like,



Now,
(iii) query $\Rightarrow \max[3, 5]$:

and max will be ~~T~~

and final segment tree will look like
above and lazy tree will have
pending updates.

Question 8) "KMP Algorithm"

"rajneeshpandeyr"

pattern: "rrarrar"

String: "rajneeshpandeyr"

↑ ↑ → not match
 r r a | r r a r → from this point
 match not match.

searching comparison & we get.

r	r	a	r	r	a	r		Pattern
0	1	0	2	0	3	4		matching value
1	1	3	2	5	3	3		move distance

Question 9)

again) ("Boyer-Moore Algorithm")

string: "rajneeshpandeyr"

pattern: "rrarrar"

String: "rajneeshpandeyr"

Pattern: "rrarrar"

→

not match with end character
 moved ahead

String: Rajneesh Prasad Singh

Pattern: Rajneesh

not matched, move ahead

String ends but pattern didn't match

Algo end.

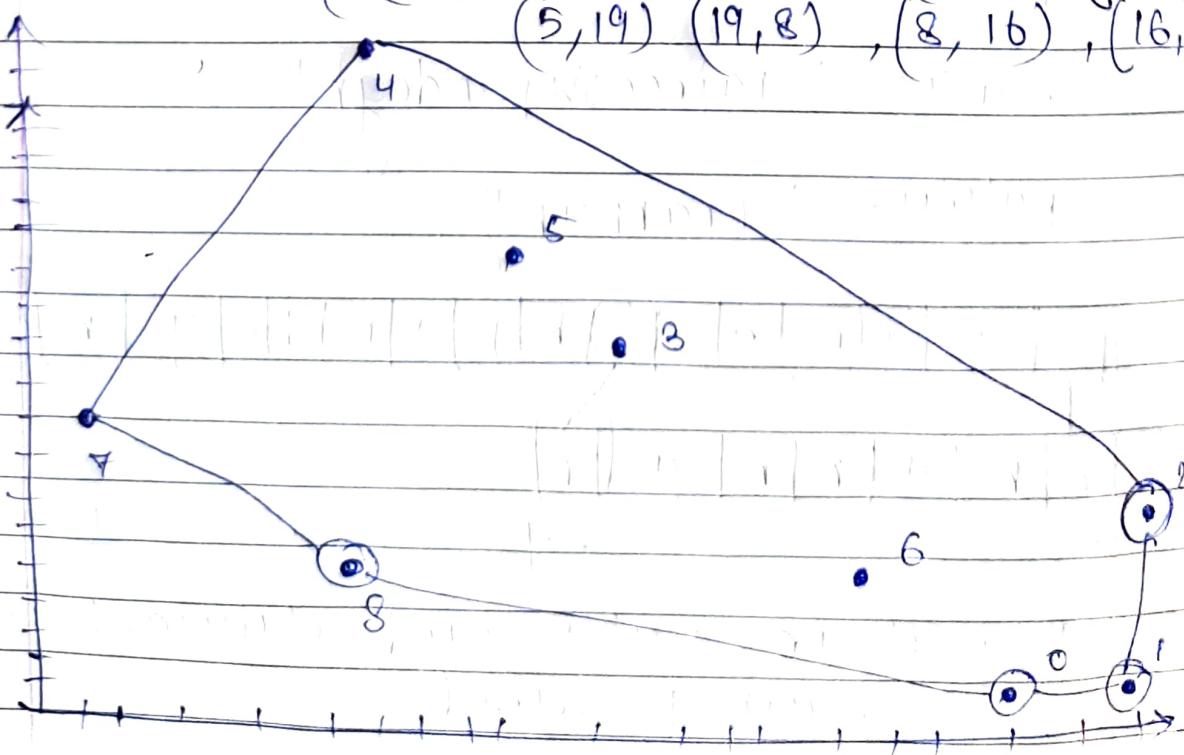
Question 10

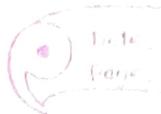
RAJNEESH PA

(18, 1, 10, 14, 5, 5), (19, 8, 16, 1)

points are,

Set of data $\{(18, 1), (1, 10), (10, 4), (14, 5), (5, 5), (5, 19), (19, 8), (8, 16), (16, 1)\}$





well well start from the indexes
and

→ try to find distance from ①
now add first and last point

→ checking counter clockwise of
③, ④, ① (ccw)

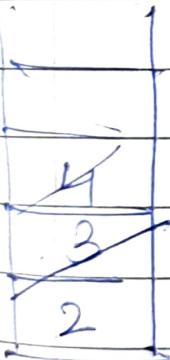
→ Push current vertex into stack
 ↳ ②

check (ccw), connected

→ push 3 into stack
check ccw (not valid)

pop from stack

now put 4 into stack



so,

final convex hull done.