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DEPARTMENT: SOFTWARE ENGINEERING.

PAPER : DISCRETE STRUCTURES.

SUBMITTED

TO: SIR ADIL.

Question : 1

Sort the given list using insertion sort.

↓
| 56 | 59 | 45 | 40 | 43 | 55 |
unsorted list

Shifting first element to the left.

↓
| 56 | □ | 59 | 45 | 40 | 43 | 55 |
sorted unsorted list

↖
| 56 | 59 | □ | 45 | 40 | 43 | 55 | After pass 1.
sorted unsorted

↖
| 45 | 56 | 59 | □ | 40 | 43 | 55 | After pass 2.
sorted unsorted

↖
| 40 | 45 | 56 | 59 | □ | 43 | 55 | After pass 3.
sorted unsorted

↖
| 40 | 43 | 45 | 56 | 59 | □ | 55 | After pass 4.
sorted unsorted

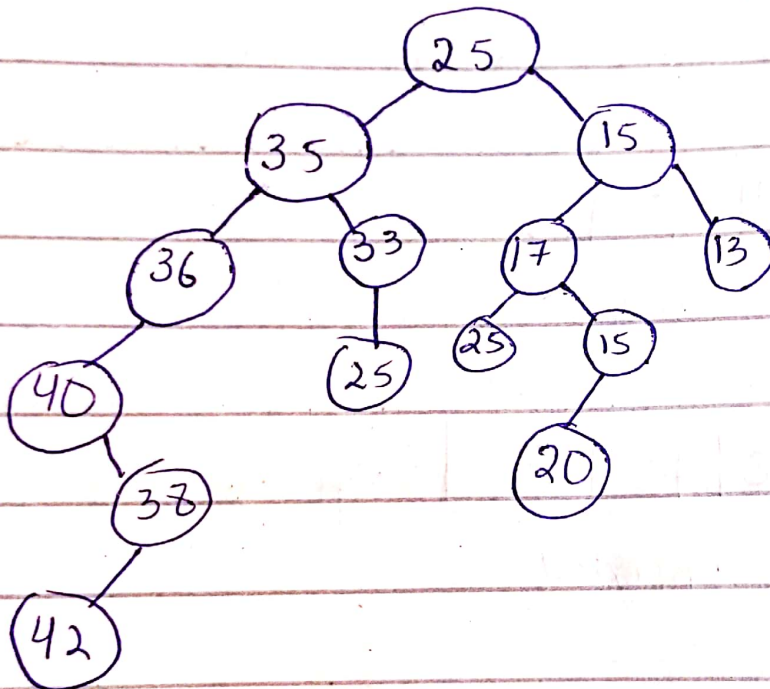
40 | 43 | 45 | 55 | 56 | 59 | After pass 5.

Hence the list is sorted

Question : 2.

Construct Binary Trees from given
Mathematical Expressions.

25, 15, 35, 17, 33, 36, 25, 13, 15, 40, 38, 42, 20.



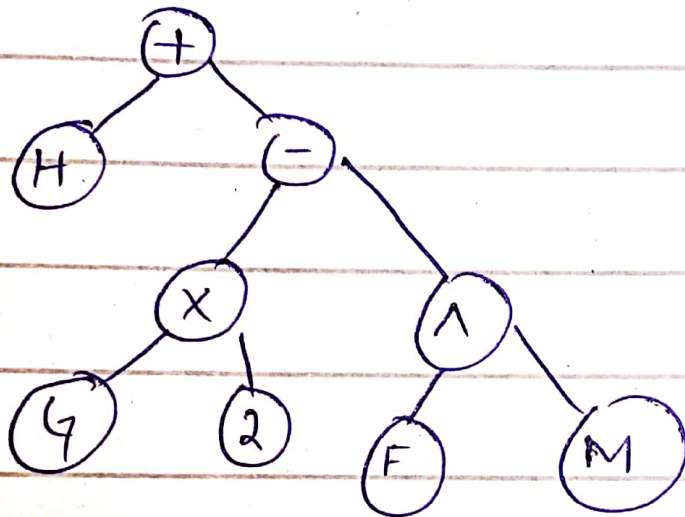
Verification using Inorder traversal.

42, ~~38~~, 40, 38, 36, 35, 33, 25, 20, 17, 15, 13.

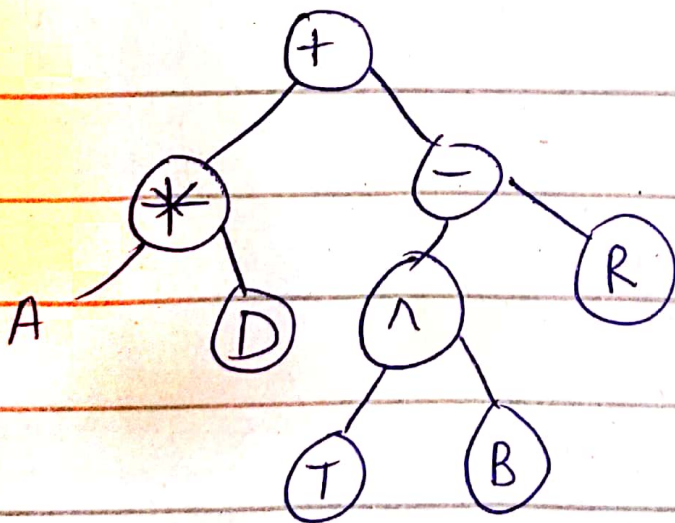
Hence verified.

Question : 3 :

$$H + G * 2 - (F \wedge M)$$



(ii) $A * D + T \wedge B - R$



Question: 4.

Answers.

Given

(i) $H + G * 2 - (F \wedge M)$

(*) Inorder traversal

H, +, G, *, 2, F, \wedge , M, -

* Pre-order traversal

+, H, -, *, G, 2, \wedge , F, M

(*) Post-order traversal:

H, G, 2, *, F, M, \wedge , -, +

* Part ii :-

$$A * D + T \wedge B - R$$

* Inorder traversal:-

A, *, d, +, T, \wedge , B, -, R

* Pre-order traversal

+, *, A, -, \wedge , T, B, R

* Post-order traversal

A, D, *, T, B, \wedge , R, -, +

Q: 5:

Fill in the Blanks.

- (i) NODE.
- (ii) EDGE.
- (iii) FIRST SUBJECT.
- (iv) SAME FAMILY.
- (v) OLDER.
- (vi) YOUNGER NODE.
- (vii) NON-LINEAR.
- (viii) FOREST.