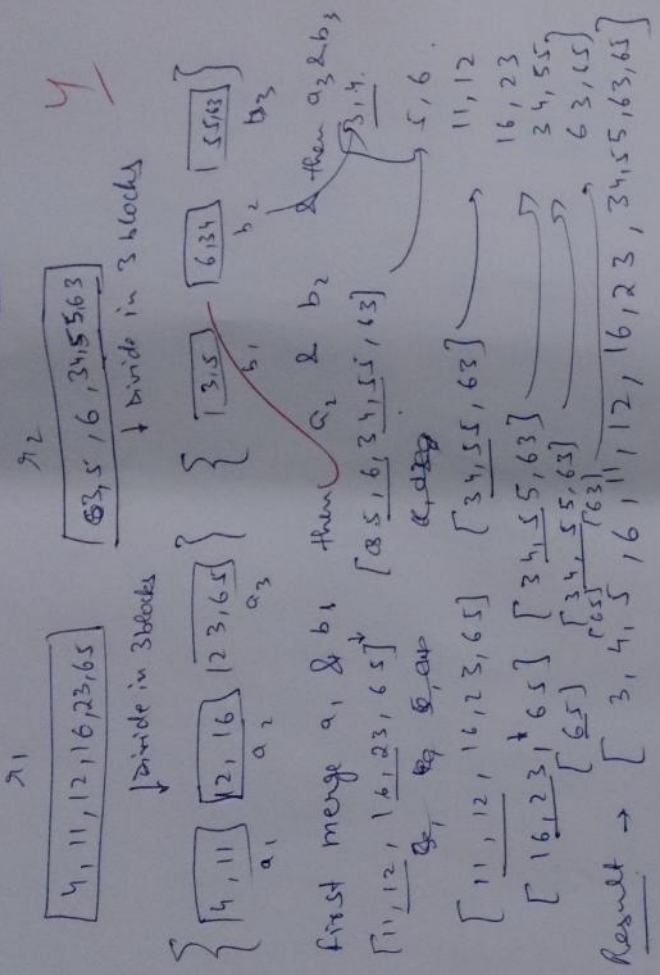
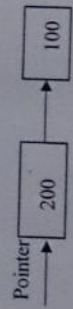


a. (4) Assume that you have internal memory of 6 locations of integer type. Sort the list [23, 12, 4, 16, 65, 11, 34, 55, 5, 63, 3, 6] of integers using external sorting technique. Show the steps of each pass.

Divide it into runs & sort them internally.



b. (2+2) Give a of sequences of requests for memory requirement that can be met by BF and not FF and vice versa if you are given following available memory chunks.

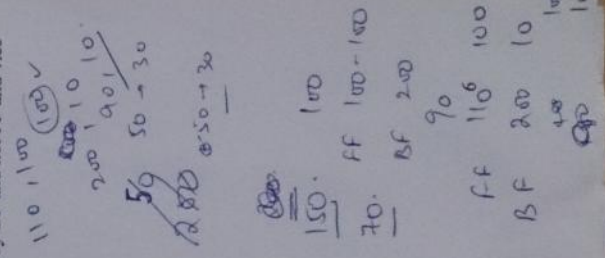


BF and not FF

- (i) 50
- (ii) 200

FF and not BF

- (i) 90
- (ii) 110
- (iii) 100



Q-2 (b) is not checked which is done at back of this page.

Name: Anshu UL (50141)
 Entry No: 20120103604
 Group: 02

MINOR II : CSL201
 (Data Structures)

Max. Time - 1 hr Max. Marks 40 Date: 25/March/2014

NOTE:

- Write your name, entry number and group in all the sheets.
- Answer all questions in the space provided and continue on the back page of the question if required.
- Answer given elsewhere will be ignored.
- For rough work use blank page at the end and space in right margin of each sheet.
- No marks for only answers. Show the working if required.

32

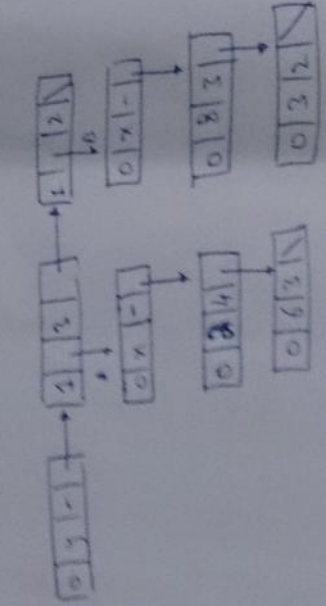
Q1-6	Q2-7	Q3-7	Q4-6	Q5-6	Q6-8	Total-40
4	1.5/4	5/2	3	6	8	28

$$-(2x^3 - 6x^2) y^3 + (8x^2 + 3x^2) y^2$$

$$= -2x^3 y^3 + 6x^2 y^3 + 8x^2 y^2 + 3x^2 y^2$$

Q1. (6)

- Represent the following polynomial $2x^4y^3 + 6x^3y^2 + 8x^2y^2 + 3x^2y^2$ using generalized list structure having node structure as (tag, data/link, exp. link). Note that tag=0, if field contains data else 1 if field contains link.



4

4

- If a binary tree T contains 120 nodes. What is the maximum height of T?
- If number of terminal nodes are 50, what is the number of nodes with degree one?

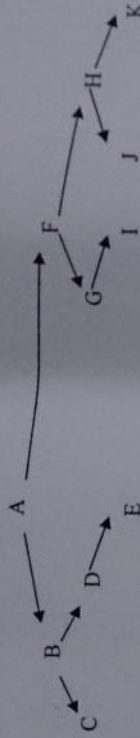
7

0

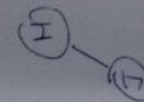
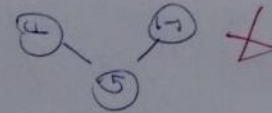
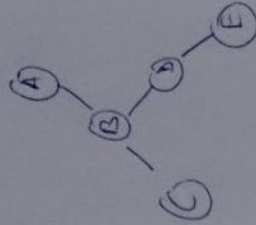
0/4

Name: ANSHUL GOYAL
 Entry No.: 2012MED0904
 Group 02
 Q2. (7)

a. (3) Given below is a binary tree corresponding to a forest. What are the trees of this forest?



1.5 ✓



1.5 ✓

b. (4) Draw a binary tree corresponding to an arithmetic expression $a + (b - c) / (d * e) * f + g$ so that **preorder**, **inorder** and **postorder** traversal of this binary tree comes out to be prefix, infix and postfix expression respectively.

$$\begin{aligned}
 & a + (b - c) / (d * e) * f + g \\
 &= \{ a + (b - c) / (d * e) * f \} + g \\
 &= \{ a + [(b - c) / (d * e) * f] \} + g
 \end{aligned}$$

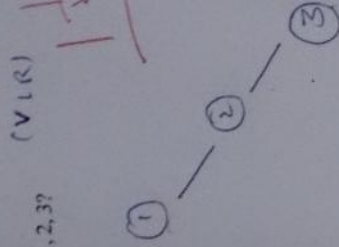
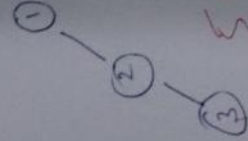
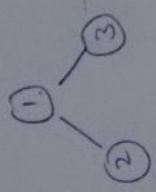
✓ 2

Name: ANSHUL GOYAL
 Entry No.: 2012M E20904
 Group 02

Q3. (7)

a. (3) Draw all possible binary trees whose preorder traversal sequence is 1, 2, 3?

Pre order 1, 2, 3

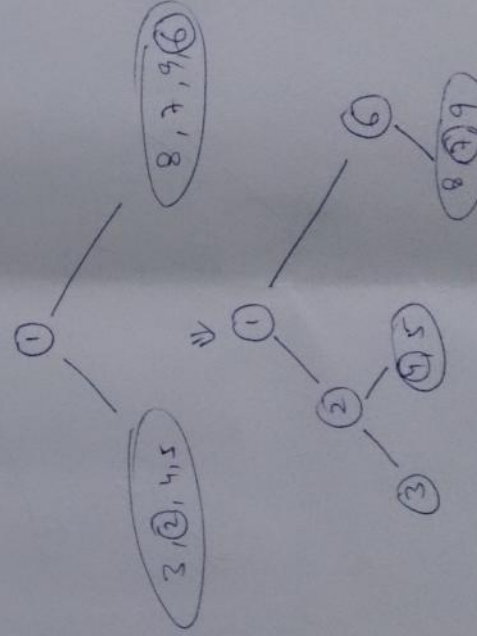


(VLR)

5/7

b. (4) You are given postorder and inorder traversal sequences of a binary tree as postorder: 3, 5, 4, 2, 8, 9, 7, 6, 1 & inorder: 3, 2, 4, 5, 1, 8, 7, 9, 6. Construct a binary tree from above sequences.

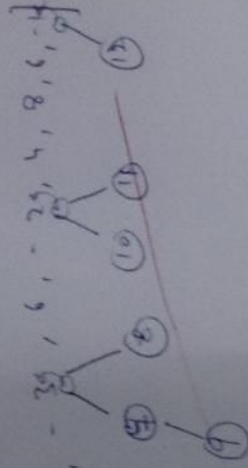
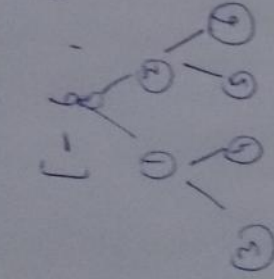
Postorder : 3, 5, 4, 2, 8, 9, 7, 6, 1
 Inorder : 3, 2, 4, 5, 1, 8, 7, 9, 6



4

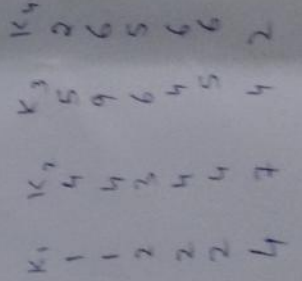
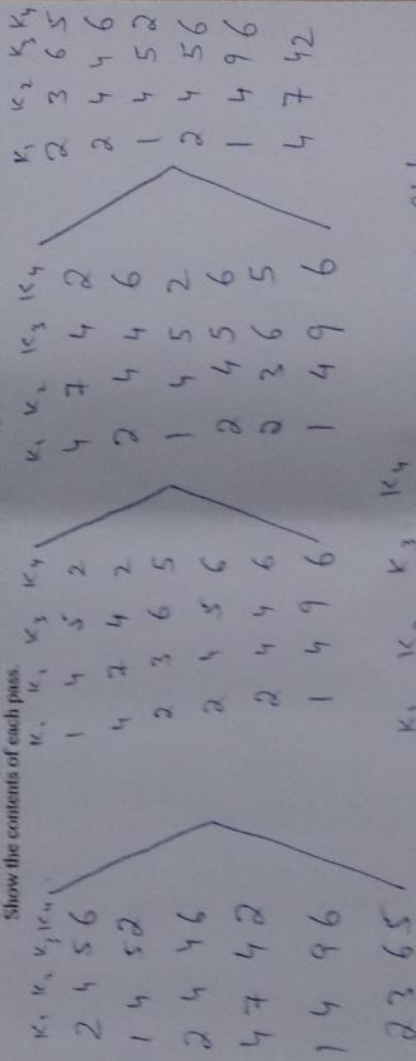
Name: ANUSHUL GOYAL
 Entry No.: 2013MCE20904
 Group: O2
 Q4. (6)

- a. (3) You are given a parent array $[-6, 1, 1, 1, 3, 3, 6, 2, 4, 8, 6, 1]$ of elements in a set $S = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$. Draw the corresponding trees of the disjoint sub-sets generated from S . Note that root of tree has parent link containing "-" number of elements in the tree.



0

- b. (3) Sort the list $[2456, 1452, 2446, 4742, 1496, 2365]$ using radix sort method as discussed in the class. Show the contents of each pass.



Sorted list

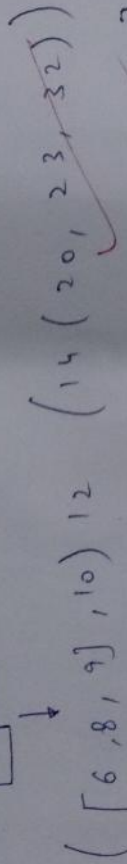
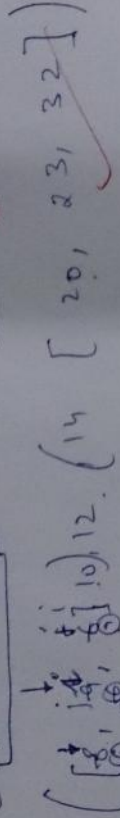
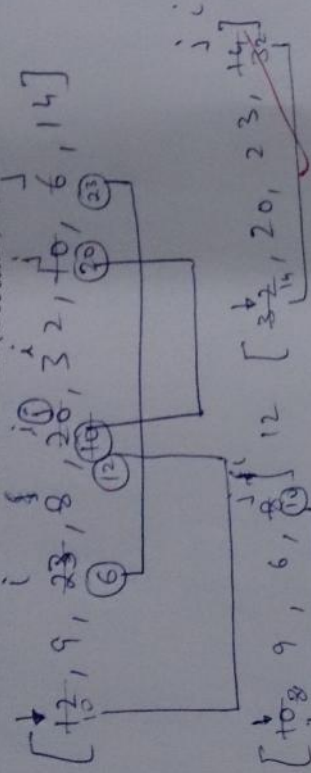
$[1452, 1486, 2365, 2446, 2456, 4742]$

3

Name: ANSHUL GOYAL
 Entry No.: 2012AME20904
 Group 02

Q5. (4+2) You are given a list [12, 9, 23, 8, 20, 32, 10, 6, 14] of integer values. Sort it in ascending order using following techniques. Show all the steps.

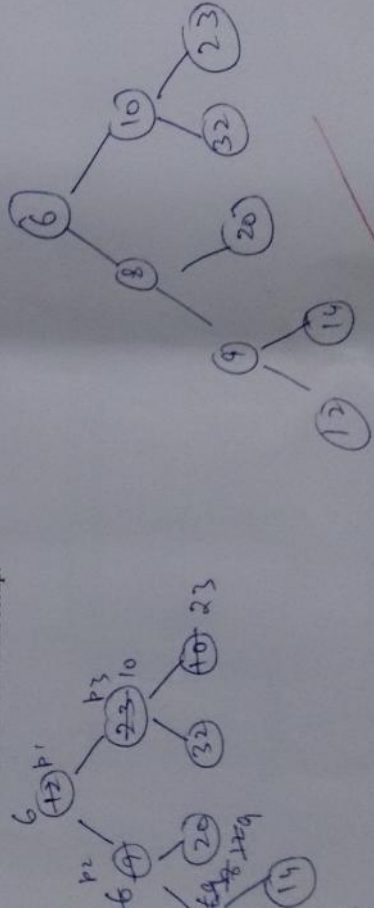
a. Quick Sort: Choose first element of a list (to be sorted) as pivot point.



=> [6, 8, 9, 10, 12, 14, 20, 23, 32]

4

b. Create initial Min Heap.



2