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**[5459]-208**

**S.E. (I.T.) (II Semester) EXAMINATION, 2018**

**DATA STRUCTURES AND FILES**

**(2015 PATTERN)**

**Time : 2 Hours**

**Maximum Marks : 50**

**N.B. :—** (i) Answer *four* questions.

(ii) Neat diagrams must be drawn wherever necessary.

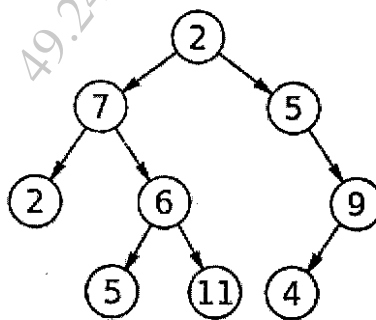
(iii) Figures to the right indicate full marks.

(iv) Assume suitable data, if necessary.

1. (a) Convert the following expression from infix to Postfix and Prefix.  
Make use of appropriate data structure which can be used  
for conversion. [6]

$$\text{a. } 2 * 3 / (2 - 1) + 5 * 3$$

- (b) Traverse a given tree in Preorder, Inorder and Postorder.[6]



Or

2. (a) Evaluate given expressions : [6]

(i)  $2 \ 3 \ * \ 2 \ 1 \ - \ / \ 5 \ 3 \ * \ +$

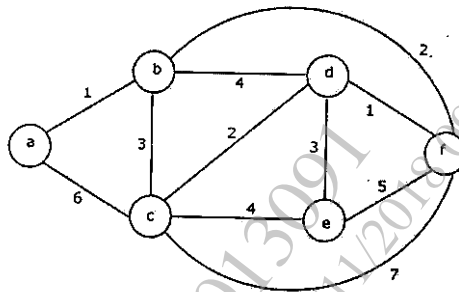
(ii)  $+ \ * \ 2 \ / \ 3 \ - \ 2 \ 1 \ * \ 5 \ 3$

P.T.O.

- (b) Explain any *three* applications of stack with appropriate example.[6]
3. (a) What is Topological sorting ? Explain it with suitable example.[6]  
 (b) What is hashing ? What are characteristics of good hash function ? Where is hashing applicable ? [6]

Or

4. (a) Apply Kruskal's algorithm to find out Minimum Spanning Tree of given graph. [6]



- (b) Apply max heap sorting technique to sort given data set :[6]  
 1, 12, 9, 5, 6, 10
5. (a) What are the benefits of AVL Tree over BST ? Explain with suitable example. [4]  
 (b) Compare AVL tree and RB tree with different parameters.[6]  
 (c) Write a short note on Splay Trees. [4]
- Or
6. (a) What is TBT ? What is advancement in TBT over BT ? Draw any suitable in-ordered TBT and traverse it in Pre-order traversal. [8]  
 (b) Write short notes on : [6]  
 (i) B Tree  
 (ii) B+ Tree.

7. (a) What primary operations can be performed on files ? Explain all of them w.r.t. file handling. [6]
- (b) Explain file opening function in C++ with different file opening modes. [6]

*Or*

8. (a) Explain prototype of the following function in C++ with example : [8]
- (i) seekg
  - (b) seekp
  - (c) tellg
  - (d) tellp
- (b) Differentiate Sequential, Index Sequential and Direct Access file. [4]