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**[5152]-578**

**S.E. (I.T.) (Second Semester) EXAMINATION, 2017**

**DATA STRUCTURES AND FILES**

**(2015 PATTERN)**

**Time : Two 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) Clearly indicate the content of stack for evaluating the following postfix expression. [6]

Assume  $A = 10$ ,  $B = 2$ ,  $C = 13$  :

(i)  $AB + C - EA - C + -$

(ii)  $ABC + *CBA - + *$

- (b) Construct a binary tree from the given traversals : [6]

postorder : HIDEFBGCA

inorder : HDIBEAFCG.

Or

2. (a) Explain the concept of Multiqueue and double ended queue with example. [6]

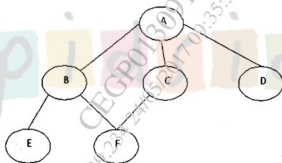
- (b) Write a pseudo code for kruskals algorithm. [6]

P.T.O.

3. (a) What are the characteristics of good hash function ? List out different techniques to resolve collision in hash table. Explain Linear probing with and without replacement with suitable example. [8]
- (b) Define binary search tree. Draw the BST for given nodes : [4]  
38, 14, 56, 23, 82, 8, 45, 70, 18, 15.

Or

4. (a) For the following graph find the DFS and BFS using suitable data structure. [4]



- (b) Sort the following number using heap sort and show the sorting stepwise : 44, 66, 33, 88, 77, 55, 22. [8]
5. (a) What is threaded binary tree explain with example. [6]
- (b) What is B-tree ? Explain the following operation on B-tree : [8]
- Inserting into B-tree
  - Deletion from B-tree.

Or

6. (a) Obtain an AVL tree by inserting one data element at a time in the following sequence : [8]  
50, 55, 60, 15, 10, 40, 20, 45, 30, 70, 80.  
Label the rotations appropriately at each stage.
- (b) Write short notes on : [6]  
(i) Red black tree  
(ii) Splay tree.
7. (a) Explain various file opening modes with respect to text and binary files. [6]  
(b) What are the primitive operations on sequential file ? Explain with example. [6]
8. (a) Compare the feature of sequential file, index sequential file and direct access file. [6]  
(b) Write C++ program to perform the following operations on direct access file : [6]  
(i) Create & display records  
(ii) Insert record.