Total No. of Questions—**8**] [Total No. of Printed Pages—**3**

| Seat No. | |
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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 wherver 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 – BA – C + –

(*ii*) ABC + *CBA – + *

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

postorder : HIDEBFGCA

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.

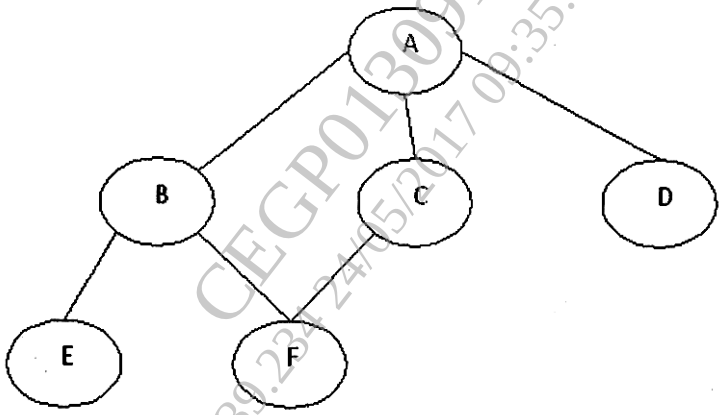
**3.** (*a*) What are the characteristics of good hash function ? List out different techniques to resolve collision in hash table. Explain Linear probing with and without replacement with suitable example. [8]

(*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]

(*i*) Inserting into B-tree

(*ii*) 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 tress

(*ii*) Splay tress.

**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.