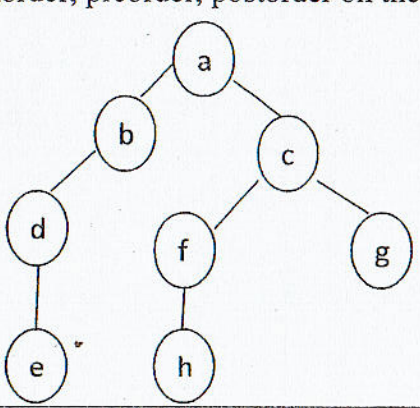
28.11.2019 (E)

K. J. Somaiya College of Engineering, Mumbai-77
(Autonomous College Affiliated to University of Mumbai)

End Semester Examinations
Nov-Dec 2019

Max. Marks: 100 **Duration: 3hours**
Class: SY BTech Semester: III
Name of the Course: Data Structures
Branch: IT/COMP
Course Code: **2UIC302 / 2UCC302**

Instructions:
(1) All Questions are Compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary

Question No.		Marks
Q 1 (a)	Explain linear and non linear data structures.	05
(b)	What are the advantages of ADT?	05
Q 1 (c)	What are the applications of stack? Write pseudo code for any one of the applications you have listed. (Clearly show the use of stack in the pseudo code). OR What are the applications of priority queue? Write pseudo code for implementing ascending priority queue.	10
Q2 (a)	Using stacks, convert the following infix notation to postfix notation: *a+(b-c)*(d+e)/f*g/h*	10
Q2 (b)	Write a pseudocode to find the smallest and largest numbers in a given singly linked list. OR Write an optimized pseudocode to check whether a given linked list is a palindrome.	10
Q3 (a)	Perform inorder, preorder, postorder on the tree in figure below: 	10

Q3 (b)	What is Binary search tree. Construct Binary search tree for the following elements: 13,3,4,12,14,10,5,1,8,2,7,9,11,6,18	10
Q4 (a)	Write pseudo code for find, put, erase operations of MAP data structure using list based implementation. OR Write pseudo code for Union and find operations of SET data structure using list based implementation.	10
Q4 (b)	Explain BFS and DFS algorithm with examples.	10
Q5 (a)	What is collision? What are the methods to resolve collision? Explain Linear probing with an example. OR What is doubly linked list? Write an algorithm to implement following operation on doubly linked list. 1. Insertion(All cases) 2. Traversal(Forward and Backward)	10
Q5 (b)	State properties of a good hash function. Explain in detail different hash functions.	10