Sanjay Ghodawat University, Kolhapur
Established as State Private University under Govt. of Maharashtra. Act No XL, 2017
2018-19
EXM/P/09/01

Year and Program:2018-19 **School of Technology** **Department of SYB.Tech**

Course Code: CST207 **Course Title: Data Structures** **Semester – III**
Day and Date: 1 Dec 18 **End Semester Examination** **Time:** **Max Marks: 100**
2:30 to 5:30. **(ESE)** 2:30pm to 5:30pm

Instructions: 1) All questions are compulsory.
2) Assume suitable data wherever necessary.
3) Figures to the right indicate full marks.

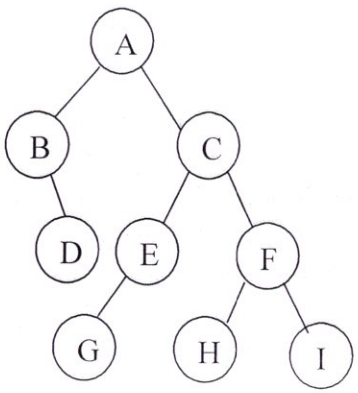
		Marks	Bloom's Level	CO
Q.1	**Solve the following**			
a)	Explain in detail about call by value and call by reference with example.	07	L1	CO1
	OR			
a)	Explain the concept of structure with syntax. Design a structure book-bank which contains title, author, number of pages and price. Also display the output.	07	L1	CO1
b)	Sort the following numbers using Merge-Sort algorithm. 38, 27, 43, 3, 9, 82, 10. Elaborate your trace steps with comments.	08	L3	CO2
	OR			
b)	Explain in detail about Quick Sort with its time complexity.	08	L2	CO2
Q.2	**Solve the following**			
a)	Convert the following infix expression to postfix and prefix expression: A * B / (C - D) + E * (F – G)	07	L5	CO3
	OR			
a)	Explain the operations of circular queue with proper C functions.	07	L2	CO3
b)	Design a function for inserting an element at the first, deleting the element at any given position for doubly linked list.	08	L6	CO4
	OR			
b)	Explain in detail about stack implementation using linked list.	08	L2	CO4

Q.3 **Solve any Two**

a)	Explain in detail about arrays in C. Write a C program to find largest number among a given array of 10 integers.	08	L2	CO1
b)	Explain in detail about linear search with suitable example.	08	L2	CO2
c)	Explain the operations of a queue with program.	08	L2	CO3
d)	Design a function for inserting an element at the first and search an element for singly linked list.	08	L6	CO4

Q.4 **Solve any Two**

a)	Define tree. Explain the tree traversal with algorithms for the given tree	09	L1	CO5



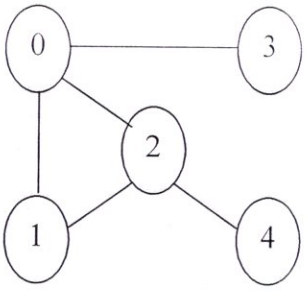
b)	Explain with C function about Binary Search tree.	09	L2	CO5
c)	Construct the Binary Search Tree from given post-order. Post-order: {20, 35, 30, 45, 40, 55, 70, 60, 50} and find in-order and pre-order traversal from the resultant tree.	09	L6	CO5

Q.5 **Solve any Two**

a)	Explain briefly about BFS using queue and example.	09	L2	CO6
b)	Explain briefly about the graph representation using sparse matrix.	09	L2	CO6

Pages

c) Explain briefly about DFS using stack for the given graph | 09 | L2 | CO6



Q.6 **Solve any Three**

a)	Construct a Binary Search tree for the following set of elements: 15, 9, 23, 3, 12, 19, 10, 21 and carry out the following operations in sequence: Add 5, add 17, delete 23, delete 9.	06	L6	CO5
b)	Discuss briefly about tree representation with suitable diagram.	06	L2	CO5
c)	Explain the techniques used to store graph into the computer's memory.	06	L2	CO6
d)	Define graph and explain any two basic terminologies used in graph.	06	L2	CO6

******