WALCHAND COLLEGE OF ENGINEERING

(Government Aided Autonomous Institute)
Vishrambag, Sangli – 416415
Second Year B.Tech. Computer Science and Engineering
Re-Exam, ODD SEMESTER, AY 2023-24
Data Structures (6CS202)

Re-Exam

PRN: _____

Day & Date: Wednesday, 06/09/2023 **Time :** 02.00 pm to 05.00 pm **Max Marks:** **100**

IMP: Verify that you have received question papers with correct course code, branch etc.

Instructions
a) All questions are compulsory.
b) Writing question number on answer book is compulsory otherwise answers may not be assessed.
c) Assume suitable data wherever necessary.
d) Figures to the right of question text indicate full marks.
e) Mobile phones, smart gadgets and programmable calculators are strictly prohibited.
f) Except PRN anything else writing on question paper is not allowed.
g) Exchange/Sharing of stationery, calculator etc. not allowed.

Text on the right of marks indicates course outcomes (Only for faculty use)

			Marks	
Q1	A)	Write a recursive function to calculate the factorial of a number and analyze the time required to execute recursive factorial function.	8	CO3
	B)	Write pseudocode to perform the addition of two polynomials.	8	CO2
	C)	Write an algorithm to find the number of nodes in a linked list.	4	CO1
Q2	A)	Differentiate between Linear queue and Circular queue.	4	CO1
	B)	Illustrate push and pop operations on stack using Linked list.	8	CO1
	C)	Write a Program to implement Linear Queue using Array. Write down time complexity of insert operation in Queue.	8	CO2
	D)	Evaluate the following Prefix Expression. + / * 20 * 50 * 3 6 30 2	4	CO2
Q3	A)	Write a recursive and non-recursive Inorder tree traversal.	8	CO2
	B)	Construct binary expression tree for the given expression. a + (b * c) + d * (e + f)	4	CO1
	C)	Illustrate different types of binary trees with example.	6	CO1
	D)	Construct a binary search tree for following integers- 50, 15, 62, 5, 20, 58, 91, 3, 8, 37, 60, 24	4	CO1

Q4 A) Describe ways of representation of graph in memory. 6

B) Describe Kruskal's algorithm for minimum cost spanning tree. 6

C) Distinguish between DFS and BFS graph traversal. 4

Q5 A) Write an algorithm for insertion sort and give its time complexity. 6

B) Differentiate between Linear search and Binary search. 4

C) Illustrate overflow handling with and without chaining, 8

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