Total nos. of printed pages: 01

Roll No:

PRANVEER SINGH INSTITUTE OF TECHNOLOGY KANPUR

Odd Semester Session 2022-23 CT-II

B. Tech. III-Semester

Data Structure (KCS301)

CO Number	Course Outcome (Please include all COs of your Course here)
CO1	Define [L1:Knowledge] facts, terms and basic concepts of various data structures like Array, List, Stack, Queue, Tree and Graph using C as the programming language with static or dynamic implementations.
CO2	Express [L2: Comprehension] the basic understanding using programming techniques for illustrating solution of problems.
CO3	Employ [L3: Application] different operations on data structures by applying knowledge and facts gained.
CO4	Analyze [L4: Analysis] the performance of data structures and algorithms to solve problems and also to draw conclusions regarding the best data structure for the problem.

Time: 1.5 Hrs. M. M. 15

Section A

Q1. Attempt all questions: **(1X3 = 3 Marks)**

a) List the difference between stack and queue. CO1

b) Explain drawback of linear queue with example. CO2

c) Compute postfix expression: 452*+5+ CO3

Section B

Q2. Attempt all questions: **(2X4 = 8 Marks)**

a i) Define Push and Pop operation in stack using array. CO1

Or

ii) Define enqueue and dequeue operation in queue using array. CO1

b i) Describe the algorithm of add element at begin and delete element at end in singly linked list. CO2

Or

ii) Describe the algorithm of add element at end and delete element at begin in singly linked list. CO2

c i) Illustrate Tower of Hanoi function for 4 disks with all iterations. CO3

Or

ii) Illustrate reverse of singly linked list using recursion. CO3

d i) Design C function for priority queue insertion and deletion using array. CO4

Or

ii) Design C function for circular queue insertion and deletion using array. CO4

Section C

(4X1 = 4 Marks)

Q3

i) Convert following infix expression into prefix expression using stack. CO4
(2(+(4/5*(5-3)) ^ (5^4)))

Or

ii) Construct Binary tree and perform all traversal. CO4
4, 3, 2, 9, 1, 6, 5, 7, 8