H.T.No. | | | | | | | | | | |

Code No: CS1501 **GEC-R14**

II B. Tech I Semester Regular Examinations, November 2016

DATA STRUCTURES USING C

(Computer Science and Engineering)

Time: 3 Hours **Max. Marks: 60**

Note: All Questions from **PART-A** are to be answered at one place.
Answer any **FOUR** questions from **PART-B.** All Questions carry equal Marks.

PART-A

6 × 2 = 12M

1. Differentiate linear and nonlinear data structures?
2. Consider the following arithmetic expression P, written in postfix notation:
   P: 12 , 7 , 3 , -, / , 2 , 1 , 5 , + , * , + .Translate P into infix expression.
3. What is circular queue? Give the advantages of circular queue.
4. Construct the binary search tree from the following traversals
   Inorder: 1 2 3 4 5 6 7 8 9
   Postorder: 1 3 5 4 2 8 7 9 6
5. Sort the given values using Quick Sort?
   65 ,70,75,80,85,60,55,50,45
6. What is acyclic graph? Give one example.

PART-B

4 × 12 = 48M

1. a) Write a C Program to implement all the operations of double linked list. (8M)
   b) What are advantages of static and dynamic memory allocations? (4M)
2. a) What is Stack? Explain its operations with an example? Give applications of stack? (6M)
   b) Write an algorithm to convert infix expression into postfix expression? (6M)
3. a) Define queue. Formulate insertion and deletion algorithms for a circular queue. (6M)
   b) Write a program for queue using arrays. (6M)
4. a) Explain the following. (6M)
   i) Binary tree ii) Binary search tree
   b) What is a threaded binary tree? Write a recursive function to traverse a binary search tree in post order. (6M)
5. a) Write an algorithm for sorting a set of positive integers in ascending order using Merge Sort procedure. Illustrate this procedure for the following keys. 50,78,8,11,3,95,65,36. (6M)
   b) Write a program for binary search. (6M)
6. a) Explain the representations of graph with an example? (6M)
   b) Write an algorithm for BFS graph traversal. (6M)

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