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II/IV B.Tech DEGREE EXAMINATION**OCTOBER, 2016****Electronics & Communication Engineering****Third Semester****Data Structures using 'C'****Time:** Three Hours**Maximum :** 60 Marks*Answer Question No.1 compulsorily.**(1X12 = 12 Marks)**Answer ONE question from each unit.**(4X12=48 Marks)***1. Answer all questions***(1X12=12 Marks)*

- a Define data structures.
- b Differentiate single and double linked list?
- c Write the syntax of node creation.
- d What is LIFO?
- e Name the operations performed on stack.
- f Convert the infix expression $A+B*C$ in to postfix expression.
- g What are the preconditions that have to be satisfied by the binary search technique?
- h Draw the expression tree for the expression: $(A+B)-(C*(D-E))$
- i Write the orders of traversal of a binary tree.
- j Define the Graph.
- k What is the spanning tree?
- l What is degree of vertex?

UNIT – I

- 2.a Write a C program to implement merge sort 6M
- 2.b Distinguish between arrays and linked lists. 6M

(OR)

- 3.a Implement list of operations by using single linked list 6M
- 3.b Write a C program to perform insertion and deletion operations on circular linked list. 6M

UNIT – II

- 4.a Describe stack ADT. Write a C program for the implementation of stack using arrays 6M
- 4.b What are the applications of a stack? Explain with examples? 6M

(OR)

- 5.a Write a C program to implement circular queue 8M
- 5.b What are the applications of queues? Write the difference between the stacks and queues. 4M

UNIT – III

- 6.a Write a C program to implement traversal operation on a binary tree. 6M
- 6.b Explain different binary tree traversal techniques with suitable examples. 6M

(OR)

- 7.a Construct an AVL tree for the following elements assume that the Insertion of elements are in the order of MAR, MAY, NOV, AUG, APRIL, JAN, DEC, FEB, JUNE, OCT & SEPT. 8M
- 7.b Distinguish between binary search tree and AVL tree. 4M

UNIT – IV

- 8.a What are the different types of representations of graph? Explain. 6M
- 8.b How to compute the in-degree and out-degree of a graph $G = (V, E)$? 6M

(OR)

- 9.a What is DFS? Explain. 4M
- 9.b Write a C program to implement DFS. 8M

