(Following Paper ID and Roll No. to be filled in your Answer Books) Paper ID: 2012267 Roll No.
Printed Pages: 4 NCS - 301

B.TECH

Regular Theory Examination (Odd Sem - III), 2016-17 DATA STRUCTURES USING 'C'

Time: 3 Hours

Max. Marks: 100

Section - A

answer of each part in short. Attempt all parts. All parts carry equal marks. Write $(10 \times 2 = 20)$

Define time complexity and space complexity of an algorithm.

structures? What are the merits and demerits of array data

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- How do you push elements in a linked stack?
- Differential linear and non linear data structures.

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- Define complete binary tree. Give example. What is the significance of priority queue?
- When does a graph become tree?
- Prove that the number of odd degree vertices in a connected graph should be the even.

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of binary search.



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<u>"</u> <u>:</u> Give the worst case and best case time complexity database applications? What is sorting? How is sorting essential for

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present all steps/iterations:

What is quick sort? Sort the given values using quick sort;

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38, 81, 22, 48, 13, 69, 93, 14, 45, 58, 79, 72

Section - B

Note: Attempt any 5 questions from this section $(5 \times 10 = 50)$

complexity. [Ex: 259 = 16 = 7(Answer)]. of digits of the given number. Also calculate the time What is recursion? Write a recursive program to find sum

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Solve the following:

((A-(B+C)*D)/(E+F)) [Infix to postfix]

 $(A + B) + *C - (D - E) ^ F$ [Infix to prefix]

752 + *415 - / -[Evaluate the given postfix expression]

of circular queue. Write a C program to implement the array representation

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Š deletion with example. Write a C program to implement binary tree insertion,

9 binary tree with neat example.

Write the C program for various traversing techniques of

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in graph along with its application. Illustrate the importance of various traversing techniques

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Compare and contrast the difference between B+ tree index files and B tree index files with an example.

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Section - C

Note: Attempt any 2 questions from this section.

 $(2 \times 15 = 30)$

10. What is meant by circular linked list? Write the functions to perform the following operations in a doubly linked

Creation of list of nodes

Insertion after a specified node.

Delete the node at a given position

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Sort the list according to descending order

Display from the beginning to end

Define AVL Trees. Explain its rotation operations with numbers into an initially empty tree. example. Construct an AVL tree with the values 10 to 1

11.

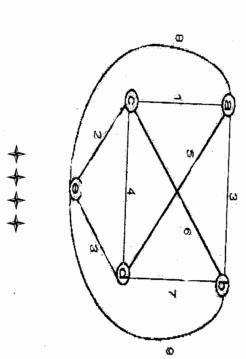
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12. Discuss Prim's and Kruskal's algorithm. Construct minimum spanning tree for the below given graph using Prim's algorithm (Source node = a).

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