B. Tech. Sem - III (Inf. Tech.) (2014 COURSE) (CBCS) : WINTER - 2018

SUBJECT: DATA STRUCTURES AND FILES

Day: Friday
Date: 30/11/2018

Time: 10.00 AM TO 01.00 PM
Max Marks: 60

W-2018-2308

N.B. :

1) All questions are **COMPULSORY**.
2) Figures to the right indicate **FULL** marks.
3) Assume suitable data if necessary.

Q.1 Define Data Structures. Elaborate the types of data Structures. Also, Enlist the applications of data structure. **(10)**

OR

Q.1 State the characteristics of an algorithm. Also, write an algorithm for Binary search. **(10)**

Q.2 Write an algorithm to convert Infix expression into Prefix expression. Also, Convert following Infix expression in Prefix: **(10)**

(A*B/C)-(D*E)^F

OR

Q.2 Write a 'C' code to push and pop data on the stack. Write an algorithm for any one application of stack. **(10)**

Q.3 Differentiate between sequential organization and linked organization. Enlist the application of link list. Describe any one in detail. **(10)**

OR

Q.3 Write a 'C' code to delete a number at the beginning and at the end of Single Link List. **(10)**

Q.4 Construct Binary Search Tree for following numbers: **(10)**
12, 8, 25, 14, 9, 6, 18, 4, 2, 17, 15.
Also, Show Inorder, Preorder and Postorder traversals for the same.

OR

Q.4 What is the difference between a tree and a graph? Explain with example, the techniques to represent graph in the memory. **(10)**

Q.5 Consider the following the list of numbers: **(10)**
67, 12, 89, 26, 38, 45, 22, 79, 53, 9, 61
Sort the numbers using 1) Heap Sort 2) Selection Sort.
Show each step in detail.

OR

Q.5 Write a 'C' functions for Quick Sort. **(10)**

Q.6 Write a 'C' program to search a list using indexed sequential search. What are the advantages of using Indexed Sequential Search over Sequential Search? **(10)**

OR

Q.6 What are the different types of files? Describe various file handling operations in 'C'. Explain index Sequential Search with example. **(10)**

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