

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 (10)
the applications of data structure.

OR

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

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

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

OR

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

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

OR

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

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, (10)
the techniques to represent graph in the memory.

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 (10)
are the advantages of using Indexed Sequential Search over Sequential
Search?

OR

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

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