B.Tech. sem-III I.T.

B. Tech. Sem - III (Inf. Tech.) (2014 COURSE) (CBCS) : SUMMER - 2019

SUBJECT: DATA STRUCTURES AND FILES

Day: Tuesday
Date: 14/05/2019

S-2019-2573

Time: 02.30 PM TO 05.30 PM
Max Marks. 60

N.B. :

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

Q.1 Write a 'C' structure to hold the data of 10 employees (emp_id, emp_name, designation, salary). Use appropriate data types. Also, write a program to accept values from user and to store it in employee structure. **(10)**

OR

Q.1 What is the difference between Data Structure, Algorithm and Psuedocode? Write an algorithm to reverse the string using stack as a data structure. **(10)**

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

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

OR

Q.2 Write a 'C' code to insert data in Circular Queue. Also, check for overflow condition. Enlist the applications of queue. **(10)**

Q.3 Write Node structure and algorithm to create the Double Link List. Explain in detail with proper example. **(10)**

OR

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

Q.4 Define Binary Search Tree (BST). Explain the different cases to delete the element from BST. Also, enlist the application of BST. **(10)**

OR

Q.4 Explain with suitable example, Breadth First Search and Depth First Search traversals of a graph. **(10)**

Q.5 Write an Algorithm for Selection sort and Insertion sort. **(10)**

OR

Q.5 Write a 'C' Code for Binary Search. **(10)**

Q.6 Describe a Sequential File and Random Access File organization. Write any three operations on Sequential File organization. **(10)**

OR

Q.6 Define Hashing and Collision. Construct hash table of size 10 using linear probing with replacement strategy for collision resolution. The hash function is h(x) = x%10. Calculate total number of comparisons required for searching. Consider slot per bucket is 125, 3, 21, 13, 1, 2, 7, 12, 4, 8. **(10)**

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