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Question Paper Code: 55821

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

Fifth Semester

Electronics and Instrumentation Engineering

15UIT521–PROGRAMMING WITH DATA STRUCTURES

(Regulation 2015)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

- Which of the following is not a type of constructor? CO1- R
(a) Copy constructor (b) Friend constructor
(c) Default constructor (d) Parameterized constructor
- Linked list search complexity is CO2- R
(a) $O(1)$ (b) $O(n)$ (c) $O(\log n)$ (d) $O(\log \log n)$
- Which data structure allows deleting data elements front and inserting at rear? CO3- R
(a) Stacks (b) Queues (c) Dequeues (d) Linkede List
- What must be the ideal size of array if the height of tree is 'n'? CO4 -R
(a) $2^n - 1$ (b) $n - 1$ (c) n (d) $2n$
- The complexity of Bubble sort algorithm is CO5 -R
(a) $O(n)$ (b) $O(\log n)$
(c) $O(n^2)$ (d) $O(n \log n)$

PART - B (5 x 3 = 15 Marks)

- Explain the structure of a C++ program with an example. CO1 -R
- What are the operators available in C++? CO2- R
- What are the operations of the stack? CO3- R
- Discuss the three binary tree traversal algorithms with examples. CO4- R
- What are the file open modes? CO5 -U

PART – C (5 x 16= 80 Marks)

11. (a) Explain Control Structures in C++ with a program. CO1 -U (16)
Or
(b) Explain Control Structures in C++ with a program. CO1- U (16)
12. (a) Explain in detail about Types of Inheritance CO2 -U (16)
Or
(b) Explain multiple catch statement with help of suitable C++ coding. CO2 -U (16)
13. (a) Write a program to implement various operation of Stack and Queue. CO3- U (16)
Or
(b) Write a function to delete the minimum element from a binary heap. CO3 -U (16)
14. (a) Draw a binary search tree for the following list CO4 -U (16)
60, 25, 75, 75, 50, 66, 33, 44. Trace the algorithm to delete the nodes 25, 75, 44 from the tree.
Or
(b) Explain in detail about AVL Trees with example. CO4 -U (16)
15. (a) Explain in detail the Divide and Conquer strategy employed to perform merge sort with an example. CO5- U (16)
Or
(b) Discuss the Quick sort algorithm with an example. CO5- U (16)