Reg. No. : | | | | | | | | | | |

Question Paper Code: 53826

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

Third Semester

Electronics and Communication Engineering

15UIT326 - DATA STRUCTURES AND ALGORITHM ANALYSIS

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. Which of the following operator cannot be overloaded

   (a) + (b) - (c) :: (d) =

2. Which is not a file mode in C++ language?

   (a) ios::binary (b) ios::in (c) ios::nocreate (d) ios::create

3. Abstract data types are _____ abstractions.

   (a) scientific (b) mathematical (c) input-output (d) array

4. The number of leaf nodes in a complete binary tree of depth d is

   (a) 2^d (b) 2^{d-1+1} (c) 2^{d+1+1} (d) 2^{d+1}

5. Which of the following represents the time complexity of insertion sort

   (a) $O(n^2)$ (b) O(n) (c) O(nlogn) (d) O(logn)

PART - B (5 x 3 = 15 Marks)

6. Define class and object..
7. What do you mean by overriding?
8. Construct min-heap for the data items 12, 7, 8, 9, 34 and 45.
9. State the properties of Red-Black trees.
10. Differentiate Internal Sorting and External Sorting.

PART - C (5 x 16 = 80 Marks)

11. (a) Explain the importance of constructor and destructor with example. (16)

Or

(b) Explain the control structure of C++ with examples. (16)

12. (a) What are the different forms of inheritance supported by C++? Explain with suitable program. (16)

Or

(b) Explain Exception Handling Architecture?.Write a C++ program for handling the Exception of Divide by Zero. (16)

13. (a) Illustrate stacks with suitable examples and sketches. (16)

Or

(b) Write an algorithm to insert into and delete from the singly linked list using cursor implementation. (16)

14. (a) How are binary search trees implemented? Discuss with diagrams. (16)

Or

(b) Review the Prim's and Kruskal's Algorithm with an example to find the Minimum Spanning Tree. (16)

15. (a) Write an algorithm for bubble sort and insertion sort and compare its time complexity. (16)

Or

(b) Explain the algorithm for merge sort and estimate its time complexity for the following values. (16)

38, 27, 43, 3, 9, 82 and 10