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

# Question Paper Code: 51837

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2016

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. Object Oriented Programming is a _____ that provides a way of modularizing programs.

   (a) technique (b) concept (c) approach (d) all of the above

2. The mechanism of deriving a _____ class from a _____ class is called inheritance.

   (a) old, old (b) new, old (c) old, new (d) new, new

3. Abstract data types are _____ abstractions.

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

4. A data structure is said to be non-linear if the data in it cannot be viewed as a

   (a) stream (b) structure (c) graph (d) sequence

5. Which of the following sorting algorithms is the fastest?

   (a) heap (b) merge (c) bubble (d) quick

PART - B (5 x 3 = 15 Marks)

6. List the basic concepts of object oriented programming.

7. Give the general form of an operator function.

8. What do you mean by a model in algorithm analysis?

9. State the properties of Red-Black trees.

10. Given the numbers 34, 8, 64, 51, 32, 31 --- show the insertion sort.

PART - C (5 x 16 = 80 Marks)

11. (a) (i) State the merits and demerits of object oriented methodology. (8)

(ii) Explain copy constructor with suitable C++ coding. (8)

Or

(b) (i) State the differences between C and C++. (8)

(ii) Write short notes on the following

(1) Applications of OOPS (2)

(2) Scope resolution operator (2)

(3) Difference between pre-increment and post increment (2)

(4) Static data member (2)

12. (a) (i) Explain multiple inheritances with suitable C++ coding. (8)

(ii) What are virtual functions? Give examples. (8)

Or

(b) How are exceptions handled in object oriented programming? (16)

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

Or

(b) Deliberate queues in detail with suitable examples and sketches. (16)

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

Or

(b) What are AVL trees and show their implementation. (16)

15. (a) Write the bubble sort algorithm and give the iteration to show how the numbers 14, 33, 27, 35, 10 are sorted using the algorithm. (16)

Or

(b) Write a detailed note on spanning tree. (16)