

Reg. No. :

--	--	--	--	--	--	--	--	--	--

Question Paper Code: 41203

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Third Semester

Electronics and Communication Engineering

14UCS323 - DATA STRUCTURES AND ALGORITHM ANALYSIS

(Regulation 2014)

Duration: Three hours

Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

- Format flags may be combined using
 - The bitwise OR (|)
 - The logical OR (||)
 - The bitwise AND (&)
 - The logical AND (&&)
- _____ constructor is called automatically when the copy of object is passed as its argument.
 - Default
 - Parameterized
 - Dynamic
 - Copy
- If you design a class that needs special initialization tasks, you want to design a(n) _____.
 - Housekeeping routine
 - Initializer
 - Constructor
 - Compiler
- _____ inheritance uses both multiple and multilevel inheritance
 - Hierarchical
 - Hybrid
 - Single
 - Multipath
- A mathematical-model with a collection of operations defined on that model is called
 - Data Structure
 - Algorithm
 - Primitive Data Type
 - Abstract Data Type

6. _____ ADT has no constraints
 (a) Stack (b) Queue (c) Tree (d) List
7. The postfix form of the expression $(A + B) * (C * D - E) * F / G$ is
 (a) $AB + CD * E - * F * G /$ (b) $AB + CD * E - F ** G /$
 (c) $AB + CD * E - FG /**$ (d) $AB + CDE * - * F * G$
8. A spanning tree of a graph with 'n' vertices has _____ edges.
 (a) atmost 'n' (b) n-1 (c) less than 'n' (d) more than 'n'
9. The complexity of multiplying two matrices of order $m * n$ and $n * p$ is
 (a) mnp (b) mp (c) mn (d) np
10. Which sorting technique is the successor of Bucket sort?
 (a) Insertion sort (b) Bubble sort (c) Radix sort (d) Quick sort

PART - B (5 x 2 = 10 Marks)

11. List out the benefits of OOPs.
12. What is the purpose of virtual functions?
13. Define $len(S)$, $first(S)$, $last(S)$ and $nilseq$.
14. Define minimum spanning tree.
15. Give the difference between greedy technique and dynamic programming.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain in detail about constructors and destructors. Write a C++ program to compute the area of square, circle and rectangle using constructors. (16)

Or

- (b) Explain the basic concepts of object oriented programming in detail with example. (16)
17. (a) Explain protected data with private and public inheritance. (16)

Or

- (b) Describe exception handling in C++ with a suitable example. (16)

18. (a) Explain with an example the formation of heap data structure and the properties to be found in a heap. (16)

Or

- (b) Discuss in detail about Priority queue. Insert 15, 24, 32, 89, 71, 62 into the queue. Delete the smallest element from the queue. (16)

19. (a) Write an algorithm to traverse binary tree level by level, with each level of the tree being traversed from left to right. (16)

Or

- (b) Explain AVL tree with suitable example. (16)

20. (a) Write a program to explain bubble sort. Which type of technique does it belong? What is the worst case and best case time complexity of bubble sort? (16)

Or

- (b) Explain in detail how the elements can be sorted using Quick sort? Sort the following elements 34, 67, 23, 15, 90, 82, 71, 59. (16)
-

