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

Question Paper Code: 31347

B.E. / B.Tech. DEGREE EXAMINATION, NOVEMBER 2015

Third Semester

Electronics and Communication Engineering

01UCS323 - DATA STRUCTURES AND ALGORITHM ANALYSIS

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Define token. What are the tokens used in C++?
2. Differentiate between class and structure.
3. Define inheritance. What are the types of inheritance?
4. Define exception.
5. Differentiate linear and non-linear data structure.
6. List the properties of algorithm.
7. Define binary tree.
8. Does the minimum spanning tree of graph gives the shortest distance between any two specified nodes? Justify your answer.
9. Define shell sort.
10. State why quick sort is more efficient than merge sort?

PART - B (5 x 16 = 80 Marks)

11. (a) Write a C++ program that

    (i) Multiply two matrices and print the result.

    (ii) Find the square root of a number. (16)

Or

(b) Write short notes on following

(i) Operator overloading (8)

(ii) Constructor and destructor (8)

12. (a) Write a C++ code to construct classes of a person with name and age as public properties, account details as private properties and percentage of mark as protected property. Construct a class with sports details of person. Construct a class to rank person based on the equal weight age to academic and sports details. Use inheritance concept. (16)

Or

(b) Write a C++ program to compute the factorial for a given number. The input value must be tested for validity. If it is negative, the user defined function find sqrt() should raise an exception. (16)

13. (a) (i) Compare best, worst and average case analysis. (6)

(ii) State and explain the methods for implementing a stack. (10)

Or

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

14. (a) (i) Explain the following routines in AVL tree with an example: (i) Insertion (ii) Single Rotation and (iii) Double Rotation. (12)

(ii) Construct a binary search tree for following elements 42, 17, 52, 36, 12, 67. (4)

Or

(b) (i) Explain prim's algorithm with appropriate example. (12)

(ii) What do you mean by network flow problem? (4)

15. (a) Explain the concept of Merge Sort by sorting the following numbers in ascending order 150, 25, 56, 16, 7, 95, 35, 17, 108, 76, 12, 21, 71, 3, 89. (16)

Or

(b) Explain any two application area that uses dynamic programming concept with an example. (16)