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

Question Paper Code: 31237

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

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. What is function overriding?
2. Give an example for a parameterized constructor.
3. What is the usage of a pointer?
4. Which operator is used to insert the data into a file.
5. Develop a simple algorithm for push operation in a stack.
6. Define Linear probing.
7. List the four types of rotations performed by an AVL tree.
8. What is the use of a minimum spanning tree?
9. Device an algorithm for a shell sort.
10. List any 2 computer algorithms based on divide-and-conquer programming approach.

PART - B (5 x 16 = 80 Marks)

11. (a) Discuss in detail about operator overloading and type conversions with suitable example programs. (16)

Or

(b) (i) An election is contested by five candidates. The candidates are numbered 1 to 5 and a voting is done by marking the candidate number in a ballot paper. Write a C++ program to read the ballot and count the votes cast for each candidate using

an array variable count. In case, a number read is outside the range 1 to 5 the ballot should be considered as a 'spoilt ballot', and the program should also count the number of spoilt ballots. (8)

(ii) Create a class for counting the number of objects created and destroyed within various block using constructor and destructors. (8)

12. (a) (i) Write a program to design a student class representing student roll no and a test class (derived class of student) representing the scores of the students in various subjects and sports class representing the score in sports. The sports and test class should be inherited by a result class having the functionality to add the scores and display the final result for a student. (8)

(ii) Write a C++ program to find the number of vowels present in the given character array using pointer arithmetic. (8)

Or

(b) (i) Analyze the concept of exception handling with suitable example programs. (10)

(ii) Create a 'STRING' class which overloads ' = = ' operator to compare two STRING objects. (6)

13. (a) (i) Explain the various asymptotic notations used for calculating time and space complexities. (8)

(ii) Explain any two applications of stack. (8)

Or

(b) Explain in detail about priority queue and its operations with an algorithm. (16)

14. (a) (i) Write down the algorithm for the Inorder traversal of a binary tree. (6)

(ii) Explain Depth first search with an algorithm. (10)

Or

(b) Explain the minimum cost spanning tree. Write its application and also write the algorithm for finding the minimal spanning tree. (16)

15. (a) Explain the merge sort application using divide and conquer technique with examples. (16)

Or

(b) Discuss in detail about Indirect sorting and bucket sorting with algorithms and suitable examples. (16)
