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Question Paper Code: 34824

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2018

Fourth Semester

Electrical and Electronics Engineering

(Common to Electronics and Instrumentation Engineering and

Instrumentation and Control Engineering)

01UIT424 - DATA STRUCTURES AND ALGORITHMS

(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. Difference between constructors and destructors.
3. Give the syntax for inheritance
4. Name the various types of multiple inheritance.
5. Define ADT.
6. Define algorithm.
7. Define tree.
8. What is complete binary tree?
9. Write the use of tapes in external sorting algorithms.
10. Define divide and conquer algorithm?

PART - B (5 x 16 = 80 Marks)

11. (a) Explain the basic concepts of object oriented programming. (16)

Or

(b) What is meant by overloading? How is operator overloading works? Write a program to add 2 complex numbers using operator overloading. What are the operators that cannot be overloaded. (16)

12. (a) (i) Write a program which generate a template class by which one can perform integer type addition and float type data addition also. (8)

(ii) What is the need for and advantages of templates? (4)

(iii) What is the difference between function template and class template? (4)

Or

(b) Develop a C++ program for Library Management system using the concept of Hybrid Inheritance. (16)

13. (a) (i) Apply the concepts of linked list in a stack and perform the stack operations. (10)

(ii) Write the applications of stack. (6)

Or

(b) (i) Write the insertion and deletion operation in doubly linked list. (10)

(ii) Write a function to insert an element into circular singly linked list. (6)

14. (a) Analyze the AVL rotate right, rotate left and delete operations with example. Write the algorithms. (16)

Or

(b) Discuss NP hard and NP complete problems with suitable example. (16)

15. (a) Apply the diminishing incremental sorting concepts using a suitable sorting algorithm and sort the following elements 77, 62, 14, 9, 30, 21, 80, 25, 70, 55 and write its algorithm. (16)

Or

(b) Implement the suitable sorting algorithm for the given data that inserts the elements at the appropriate position 13, 81, 92, 43, 65, 31, 57, 26, 75, 0 and write the relevant algorithm. (16)