

Reg. No. :

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

Question Paper Code: 34824

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2019

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. Difference between Class and structure.
2. Write a C++ program to check the given integer is Prime or composite number.
3. Illustrate the exception handling mechanism.
4. What do you mean by pure virtual function?
5. What are the features of an efficient algorithm?
6. Define algorithm.
7. Define tree.
8. What is complete binary tree?
9. What do you mean by greedy algorithms?
10. Name two sorting algorithm that does not uses divide and conquer strategy.

PART - B (5 x 16 = 80 Marks)

11. (a) Write a member function and friend function to subtract two complex numbers in C++.

(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) What is virtual function? Explain with an example how late binding is achieved using virtual function.

(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) Write a C++ code to perform addition of two polynomials using link list form of queue.

(16)

14. (a) Illustrate the depth first search algorithm with a graph and explain.

(16)

Or

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

(16)

15. (a) Discuss the quick sort algorithm and apply the same for the following numbers 90, 77, 60, 99, 55, 88, 66.

(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)