

Reg. No. :

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

Question Paper Code: 34824

B.E. / B.Tech. DEGREE EXAMINATION, MAY 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. What are the features required for object-based programming Language?
2. What is friend function?
3. What are objects and how they are created?
4. Name the various types of multiple inheritance.
5. Define ADT.
6. Define algorithm.
7. Define connected components of a graph. Write its uses.
8. What is complete binary tree?
9. What do you mean by greedy algorithms?
10. Define divide and conquer algorithm?

PART - B (5 x 16 = 80 Marks)

11. (a) Explain in detail about class, objects, methods and messages. (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) What is exception handling? Explain. (8)

(ii) With suitable example program explain the concept of virtual function. (8)

Or

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

13. (a) (i) Write the algorithms for the operations of linked queues. (8)

(ii) Explain the representation of priority queue. (8)

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) Define AVL trees. Explain the insertion operations to a node at LL, RR, LR, RL case with an example. (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) Explain how the travelling salesman problem can be solved using greedy algorithm. (16)