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Question Paper Code: 44824

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2020

Fourth Semester

Electrical and Electronics Engineering

14UIT424 - DATA STRUCTURES AND ALGORITHMS

(Common to EIE and ICE branches)

(Regulation 2014)

Duration: 1.15 hrs

Maximum: 30 Marks

PART A - (6 x 1 = 6 Marks)

(Answer any six of the following questions)

1. When overloading unary operators using Friend function, it requires _____ arguments.
(a) Zero (b) One (c) Two (d) Three
2. A Constructor that does not have any parameters is called _____ Constructor.
(a) Custom (b) Parameterized (c) Copy (d) Default
3. Class X, class Y and class Z are derived from class BASE. This is _____ inheritance.
(a) Multiple (b) Multilevel (c) Hierarchical (d) Single
4. Pick out the correct statement in function template
(a) One function will work with many different types
(b) it will take a long time to execute
(c) duplicate code is increased
(d) None of these
5. The complexity of Bubble sort algorithm is
(a) $O(n)$ (b) $O(\log n)$ (c) $O(n^2)$ (d) $O(n \log n)$

6. Linked lists are best suited
- (a) for relatively permanent collections of data
 - (b) for the size of the structure and the data in the structure are constantly changing
 - (c) for both of above situation
 - (d) none of these
7. Which algorithm is based on divide-and-conquer programming approach?
- (a) bubble sort
 - (b) selection sort
 - (c) merge sort
 - (d) shell sort
8. How many loops are there in Minimum Spanning Tree?
- (a) One
 - (b) Two
 - (c) Many
 - (d) None
9. The complexity of Bubble sort algorithm is
- (a) $O(n)$
 - (b) $O(\log n)$
 - (c) $O(n^2)$
 - (d) $O(n \log n)$
10. Which of the following algorithm design technique is used in the quick sort algorithm?
- (a) Dynamic programming
 - (b) Backtracking
 - (c) Divide and conquer
 - (d) Greedy method

PART – B (3 x 8= 24 Marks)

(Answer any three of the following questions)

11. Explain in detail (i) Tokens (ii) Functions in C++ and (iii) basic concepts in OOP. (8)
12. Define Inheritance. Explain the types of inheritance in detail with example. (8)
13. Let P be a pointer to a singly linked list. Show how this list may be used as a stack. That is, write algorithms to push and pop elements. Specify the value of P when the stack is empty. (8)
14. Write routines to implement the basic binary search tree operations with suitable examples. (8)
15. Develop Heap sort , sort the given numbers 12, 56, 34, 78, 23 and write its routine. (8)