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Question Paper Code: 98623

B.E./B.Tech. DEGREE EXAMINATION, MAY 2024

Sixth Semester

Information technology

19UIT623- OBJECT ORIENTED PROGRAMMING AND DATA STRUCTURES

(Regulations 2019)

Duration: Three hours

Maximum: 100 Marks

Answer All Questions

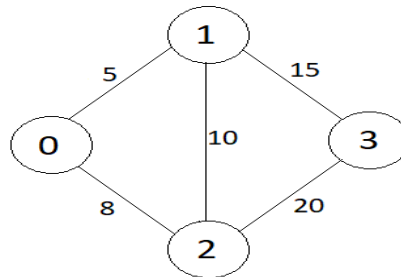
PART A - (10x 2 = 20 Marks)

1. What is the purpose of using virtual functions? CO1- U
2. Write an algorithm to find whether the number is even or odd using if else statement. CO2- App
3. Name some applications of Queue CO1- U
4. List the advantages of an array over linked list CO1- U
5. Define the term tree traversal and mention the type of traversals? CO1- U
6. Define how the graphs can be represented in the data structures. CO1- U
7. What is the purpose of using virtual functions? CO1- U
8. Write an algorithm to find whether the number is even or odd using if else statement. CO2- App
9. Name the algorithm used to find the shortest path in a graph. CO3- U
10. How you define a minimum spanning tree? CO3- U

PART – B (5 x 16= 80Marks)

11. (a) Write an algorithm and a program to implement the Constructor and Destructor using C++ CO2-App (16)
- Or
- (b) Write an algorithm and a program to implement hybrid inheritance using C++. CO2-App (16)

12. (a) Compare and Contrast the various functionalities of types of Linked list with types of Queues. CO3-Ana (16)
 Or
 (b) Analyze the operations of list ADT with stack ADT CO3-Ana (16)
13. (a) Differentiate the methodologies used in BFS and DFS with an example CO1-U (16)
 Or
 (b) Differentiate the functionalities of Binary trees and AVL trees with an example CO1-U (16)
14. (a) Construct a binary search tree for the given list of number CO2-App (16)
 8,18,25,11,14,4,18,31,45,22,35,49
 Or
 (b) Apply Kruskals algorithm for the given weighted graph and find the cost of the graph CO2-App (16)



15. (a) Write a C++ program to insert an element to circular queue and delete an element from a circular queue using array implementation. CO2- App (16)
 Or
 (b) Data[] is an array that is declared as int Data[20]; and contains the following values:
 Data[] = {12, 32, 43, 54, 65, 74, 78, 89, 95, 100};
 (a) Calculate the length of the array.
 (b) Find the upper bound and lower bound.
 (c) Show the memory representation of the array.
 (d) If a new data element with the value 62 has to be inserted, find its position.
 (e) Insert a new data element 105 and show the memory representation after the insertion. CO2- App (16)