

2453-18-737-041

Code No. 2914 / AICTE

FACULTY OF ENGINEERING

B.E. (I.T) (AICTE) III – Semester (Main) Examination, December 2019

Subject: Data Structures

Time: 3 Hours

Max.Marks: 70

Note: Answer all questions from Part-A and any five questions from Part-B

PART – A (10x2 = 20 Marks)

1. What are access modifiers?
2. What is a class and object?
3. Explain program organisation in C++?
4. Differentiate between array and linked list.
5. Convert the following infix expression to postfix form $A+B/C \times D-E$
6. Write the difference between graphs and trees.
7. What are threaded binary trees?
8. What is a balance factor of a node in AVL tree?
9. What is spanning tree and minimum cost spanning tree?
10. What is weighted graph? Give example.

PART – B (5x10 = 50 Marks)

- 11 a) Explain functions and inline functions in C++ with examples and how they are different? (6)
b) Write a recursive program in C++ to find the factorial of a given number. (4)
- 12 a) Write a C++ program for stack as ADT? (5)
b) Explain inheritance methods in C++. (5)
- 13 What are templates in C++? Explain two types of templates with examples. (10)
- 14 a) What is hashing? (2)
b) Explain the following over flow handling techniques linear probing, quadratic probing and chaining. (8)
- 15 Create a AVL tree in following order MARCH, MAY, NOVEMBER, AUGUST, APRIL, JANUARY, DECEMBER, JULY, FEBRUARY, JUNE, OCTOBER, SEPTEMBER (based on alphabetical order i.e., January > February because j > f August > April because second letter u > p). (10)
- 16 a) Explain BFS with an example. (5)
b) Write Prim's algorithm and explain with an example. (5)
- 17 Write short notes on: (4)
a) Merge sort (3)
b) Max heap and min heap (3)
c) Binary tree traversal techniques. (3)
