**Code No: 133AG** **R16**

**JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD**
**B.Tech II Year I Semester Examinations, November/December - 2018**
**DATA STURCTURES THROUGH C++**
**(Common to CSE, IT)**

**Time: 3 Hours** **Max. Marks: 75**

**Note:** This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit.
Each question carries 10 marks and may have a, b, c as sub questions.

## PART- A

**(25 Marks)**

| | | |
|---|---|---|
| 1.a) | What are the input and output statements in C++? | [2] |
| b) | What is destructor? Explain. | [3] |
| c) | Discuss about two dimensional arrays. | [2] |
| d) | What is stack? What are the operations performed on stack? | [3] |
| e) | Define a max heap. | [2] |
| f) | What are the properties of binary tree? | [3] |
| g) | What is rehashing technique? | [2] |
| h) | Compare linear search and binary search. | [3] |
| i) | What is undirected graph? Give its properties. | [2] |
| j) | What are the applications of graphs? | [3] |

## PART-B

**(50 Marks)**

2.a) What is an exception? Discuss about throwing an exception and handling an exception.
b) Explain about call by reference technique. [5+5]

**OR**

3.a) Explain new and delete operators with an example programs.
b) What is polymorphism? Explain. [5+5]

4.a) Discuss about linked implementation of queue ADT.
b) How to evaluate postfix expression? Explain. [5+5]

**OR**

5. Define and explain about circular queue and its operations with an examples. [10]

6.a) Explain the linked representation of a threaded binary tree.
b) Differentiate between full binary tree and complete binary tree. [5+5]

**OR**

7.a) Define tree. Explain all terms associated with trees.
b) What are various operations that can be performed on a binary tree? Explain. [5+5]

8.a) Discuss the concept of quick sort with an example.
b) Explain the concept of merge sort in detail. [5+5]

**OR**

9.a) What is searching? Discuss various types of searching technique.
b) Explain the concept hash table with an example. [5+5]

10.a) Explain in detail about balanced binary trees.
b) Explain in brief about AVL trees. [5+5]

**OR**

11.a) Discuss in detail about red-black trees.
b) Compare various search trees. [5+5]

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