QP Code: RA22BCA013 | Reg. No | | | | | | | | | | | AR 22

# GIET UNIVERSITY, GUNUPUR – 765022

B. C. A (Second Semester) Examinations, August' 2023

## BCA20203 - Data Structures

Time: 3 hrs | Maximum: 70 Marks

**The figures in the right hand margin indicate marks.**

**PART – A: (Multiple Choice Questions)** **(1 x 10 = 10 Marks)**

Q. 1 Answer ***ALL*** questions | CO # | PO #

a. Major operation performed on data structures are — CO1 — PO1
(i) Sorting (ii) searching
(iii) inserting (iv) all of these

b. Process of inserting an element in stack is called? — CO1 — PO2
(i) Add (ii) Push
(iii) insert (iv) None of these

c. Elements can be added or removed at both end is called? — CO1 — PO3
(i) Queue (ii) Dequeue
(iii) Circular queue (iv) All of the above

d. The individual elements in an array are called? — CO1 — PO2
(i) Identifier (ii) Encrypted
(iii) Decrypted (iv) Subscripted

e. Which of the following operations are done in a hash table? — CO4 — PO3
(i) Insert only (ii) Search only
(iii) Insert and Search (iv) Replace

f. In a linked list Implementation ,a node carries information regarding___ — CO2 — PO3
(i ) Data (ii) Link
(iii) Data and Link (iv) Node

g. A graph is a collection of — CO3 — PO2
(i) Row and Columns (ii) Vertices and Edges
(iii) equations (iv) None of these

h. The node which has no children is called as — CO3 — PO2
(i) Root Node (ii) Leaf Node
(iii) Parent Node (iv) Internal Node

i. In a stack if a user tries to remove an element from an empty stack is called___ — CO1 — PO3
(i) underflow (ii) Empty collection
(iii) Overflow (iv) Garbage Collection

j. What is load factor? — CO4 — PO2
(i) Average array size (ii) Average key size
(iii) Average chain length (iv) Average hash table length

**PART – B: (Short Answer Questions)** **(2 x 10 = 20 Marks)**

| Q.2. Answer ***ALL*** questions | CO # | PO # |
|---|---|---|
| a. Why do we use queue? | CO1 | PO2 |
| b. How the elements of 2-D array are stored in the memory Explain briefly? | CO1 | PO2 |
| c. What are the operations performed on the list? | CO2 | PO2 |
| d. What are the Disadvantages of sparse matrix? | CO2 | PO2 |
| e. Define Directed graph. | CO3 | PO2 |
| f. Define Degree of a node in Tree. | CO3 | PO2 |
| g. Mention the demerits of Linked List. | CO2 | PO3 |
| h. Define searching. | CO4 | PO2 |
| i. Define collision. | CO4 | PO3 |
| j. Define complete binary tree. | CO3 | PO2 |

**PART – C: (Long Answer Questions)** **(10 x 4 = 40 Marks)**

| Answer ALL questions | CO # | PO # |
|---|---|---|
| 3.a. Write an algorithm for how to delete an element in a given array. | CO1 | PO3 |
| b. Explain Array Implementation of Stack. | CO1 | PO2 |
| (OR) | | |
| c. Explain the steps involved creating a single linked list. | CO2 | PO2 |
| d. Explain the steps involved in inserting an element at the beginning of double linked list. | CO2 | PO2 |
| 4.a. Explain what infix, postfix and prefix Expressions. | CO1 | PO3 |
| b. Write an algorithm to insert and delete an element from stack. | CO1 | PO3 |
| (OR) | | |
| c. Explain the steps to delete an element form the single linked list. | CO2 | PO3 |
| d. Explain the steps involved in insertion at the end of single linked list | CO2 | PO3 |
| 5.a. What is a Graph? Explain different Terminologies in Graph. | CO3 | PO2 |
| b. What is Binary search Tree explain Briefly with example? | CO3 | PO3 |
| (OR) | | |
| c. Explain Hash Function. | CO4 | PO2 |
| d. Explain different types of Hash function briefly. | CO4 | PO3 |
| 6.a Differentiate between DFS and BFS. | CO3 | PO2 |
| b. Explain BFS briefly. | CO3 | PO2 |
| (OR) | | |
| c. Explain Bubble sort with suitable example. | CO4 | PO3 |
| d. What is the difference between Selection sort and Bubble sort ? | CO4 | PO2 |

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