Seat No. _____

# HN-003-1032001

## B. C. A. (Sem. II) (CBCS) (W.E.F.-2016) Examination

**April – 2023**

## Data Structure Using C Language : CS-07

**Faculty Code : 003**
**Subject Code : 1032001**

Time : $2\frac{1}{2}$ Hours / Total Marks : **70**

**1** (a) Attempt the following : **4**

(1) The default initial value of static storage class is _____.

(2) Name of array refers _____ address of an array.

(3) _____ function is used to de allocate memory.

(4) _____ operator is called address of operator.

(b) Answer in brief : (Any 1 out of 2) **2**

(1) Explain dangling pointer problem with example.

(2) Explain Enumerated constant with example.

(c) Answer in detail (Any 1 out of 2) **3**

(1) Explain Big-Oh notation.

(2) How to pass array to function as arguments ? Explain with example.

(d) Write a note on : (Any 1 out of 2) **5**

(1) Explain dynamic memory allocation functions with example.

(2) Explain Time and space complexities of an algorithm.

**2** (a) Attempt the following : **4**

(1) If an edges in graph has identical end points, It is called a _____.

(2) _____ sorting method is also known as bin sort.

(3) In _____ sorting techniques it compare each element of the list with element next to it.

(4) DFS stands for _____.

(b) Answer in brief : (Any 1 out of 2) **2**

(1) Write an algorithm for bubble sort.

(2) Define minimal spanning tree.

(c) Answer in detail : (Any 1 out of 2) **3**

(1) Explain Binary Search method.

(2) Explain adjacency List and adjacency matrix representation of graph.

(d) Write a note on : (Any 1 out of 2) **5**

(1) Write a program for Insertion sort.

(2) Explain Graph traversal techniques in detail.

**3** (a) Attempt the following : **4**

(1) FIFO stands for _____.

(2) If tos = –1 then, the stack is _____.

(3) Recursion is implemented using _____.

(4) Convert infix to postfix : (A+B)*C/(D+E).

(b) Answer in brief : (Any 1 out of 2) **2**

(1) What is RPN ? Explain with example.

(2) Define priority queue.

(c) Answer in detail : (Any 1 out of 2) **3**

(1) Explain types of data structure.

(2) Explain types of Deque.

(d) Write a note : (Any 1 out of 2) **5**

(1) Write a menu driven program to perform insert, delete and display operations on circular queue.

(2) Write an algorithm step for push, pop, and display operations in stack.

**4** (a) Attempt the following : **4**

(1) Linked list is known as _____ data type.

(2) Linked list is consisting a group of _____.

(3) A _____ linked list can be performed traversal in both directions.

(4) Each node in singly linked list contains ___ fields.

(b) Answer in brief : (Any 1 out of 2) **2**

(1) Define linked list.

(2) Write Advantages of Linked list over array.

(c) Answer in detail : (Any 1 out 2) **3**

(1) Write an algorithm for following in singly linked list : Create, display, insert (at any place).

(2) Explain header linked list with example.

(d) Write a note on : (Any 1 out 2) **5**

(1) Write a program to perform reversing a linked list.

(2) Write a menu driven program to create doubly linked list with following operation : Create(), Insertfirst(), deletefirst(), display().

**5** (a) Attempt the following : **4**

(1) The root node has _____ parent node.

(2) The child node of same root node is called _____.

(3) In _____ traversal method root node is visited first.

(4) Full form of BST.

(b) Answer in brief : (Any 1 out of 2) **2**

(1) Define : Binary tree, root node, leaf node.

(2) Define : B-tree.

(c) Answer in detail : (Any 1 out of 2) **3**

(1) Explain height balance tree in detail.

(2) Write a note on classification of tree.

(d) Write a note on : (Any 1 out of 2) **5**

(1) Write a program to insert node in BST and perform searching.

(2) What do you mean by traversal of tree ? Explain tree traversal methods in detail.

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