



DJ-003-003205

Seat No. _____

B. C. A. (Sem. II) (CBCS) Examination

March - 2022

**CS - 07 : Data Structure Using 'C' Language
(Old Course)**

Faculty Code : 003

Subject Code : 003205

Time : $2\frac{1}{2}$ Hours]

[Total Marks : 70

1 Fill in the following blanks : **20**

- (1) The size of the array avg in the following statement is _____ int avg[10];
- (2) If we write $\text{int } x[2][3] = \{0,1,2,0,1,2\}$; then array x has _____ rows and _____ columns.
- (3)

```
int val, *ptr, a = 10;
ptr = &a;
val = *ptr;
```

The value of "val" in the above code is _____
- (4) What will the value of blank in the following code to increment pointer ptrl by one. $\text{ptrl} = \text{ptrl} + \underline{\hspace{2cm}}$
- (5) A/an _____ is the finite, ordered set of homogeneous elements.
- (6) Singly linked list has _____ parts while doubly linked list has _____ parts.
- (7) Full form of TOS is _____
- (8) Full form of RPN is _____
- (9) RPN of : $A + B * C$ is _____
- (10) Full form of FIFO is _____
- (11) The operation for adding an entry to a stack is traditionally called _____
- (12) New nodes are added to the _____ of the queue.
- (13) Each entry in a linked list is called a _____
- (14) The situation when in a linked list $\text{START} = \text{NULL}$ is _____.

- (15) Value of the first linked list index is _____
- (16) In the tree construction, _____ is the suitable & efficient data structure.
- (17) The _____ of a node is the number of edges containing that node.
- (18) If an edge has identical end points, it is called a _____
- (19) Full form of DFS is _____
- (20) Full form of BFS is _____

- 2** (A) Attempt the followings : (Any **Three**) **6**
- (1) What is sorting? List types of sorting.
 - (2) What is Queue? List types of Queue.
 - (3) Explain the term ancestors in binary tree.
 - (4) Define a graph.
 - (5) Write an algorithm to delete element in double ended queue.
 - (6) Explain Multigraph.
- (B) Attempt the followings : (Any **Three**) **9**
- (1) Write a program to implement bubble sort.
 - (2) List different types of linear and non-linear data structures.
 - (3) Write an algorithm to traverse a Grounded header linked list.
 - (4) Write an algorithm of post-order traversing of binary tree.
 - (5) Explain advantages of linked list over array.
 - (6) Write a C code to display items of the doubly linked list in reverse order.
- (C) Attempt the followings : (Any **Two**) **10**
- (1) Explain Big-Oh Notation.
 - (2) Write a program to enter 10 numbers in one array and search the entered numbers using linear search.
 - (3) Discuss primitive and non-primitive data structure.
 - (4) Implement doubly linked list with the following functions: insert(), delete(), search()
 - (5) Write a program to implement queue using array.

- 3** (A) Attempt the followings : (Any **Three**) **6**
- (1) Explain the term root in binary tree.
 - (2) Give and explain application area of stack.
 - (3) What do you mean by circular queue? Explain advantages of it over simple queue.
 - (4) What is Linked list? List types of Linked list.
 - (5) Write an algorithm for creating a header linked list.
 - (6) Explain Digraph.
- (B) Attempt the followings : (Any **Three**) **9**
- (1) Compare Insertion sort and Selection sort.
 - (2) Compare Stack with Queue.
 - (3) Differentiate: Singly Linked List v/s Doubly Linked List.
 - (4) Differentiate: adjacency matrix v/s adjacency list.
 - (5) Differentiate: Call by Value v/s Call by Reference.
 - (6) Differentiate: DFS v/s BFS.
- (C) Attempt the followings : (Any **Two**) **10**
- (1) Write an algorithm for selection sort.
 - (2) Implement stack with the following functions: push(), pop(), peep(), change()
 - (3) Implement singly linked list with the following functions: insert(), count(), append(), sort()
 - (4) Explain polish notation in detail with suitable example.
 - (5) Write a program to create and traverse (in-order) binary tree.
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