



Seat No. _____

HN-003-3032001

B. C. A. (Sem. II) (CBCS) (W.E.F. 2022)

Examination

April - 2023

Data Structure Using C Language : CS-07

Faculty Code : 003

Subject Code : 3032001

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

- 1 (a) Attempt the following : 4
- (1) A _____ function is used to de allocate memory.
 - (2) The _____ notation is used when the function g(n) defines a lower bound for the function f(n).
 - (3) Backtracking algorithm is based on _____.
 - (4) In O notation, the expression O called _____ symbol.
- (b) Answer in brief : (any 1 out of two) 2
- (1) Define Big-Oh notation.
 - (2) Explain dangling pointer problem with example.
- (c) Answer in detail : (any 1 out of 2) 3
- (1) Explain classes of algorithm.
 - (2) Explain enumerated constant with example.
- (d) Write a note on : (any 1 out of 2) 5
- (1) Explain dynamic memory allocation functions with example.
 - (2) What is algorithm analysis ? Explain time and space complexity of algorithm.
- 2 (a) Attempt the following : 4
- (1) _____ sorting method is also known as bin sort.
 - (2) In _____ sorting techniques it compare each element of the list with element next to it.
 - (3) List the sorting techniques based on divide and conquer approach.
 - (4) Quick sort is using _____ for implementation.

- (b) Answer in brief : (any 1 out of 2) 2
 (1) Write an algorithm for bubble sort.
 (2) Explain shell sort techniques.
- (c) Answer in detail : (any 1 out of 2) 3
 (1) Explain bucket sort technique.
 (2) Write an algorithm for selection sort.
- (d) Write a note on : (any 1 out of 2) 5
 (1) Write a program for Insertion sort.
 (2) What do you mean by searching ? Explain binary search with example.
- 3** (a) Attempt the following : 4
 (1) LIFO stands for _____.
 (2) In queue elements are inserted at _____ end and deleted at _____ end.
 (3) When new data are to be inserted into a data structure, but there is no available space such situation is known as _____.
 (4) Convert infix to postfix : $a^b / (c*d) + e$.
- (b) Answer in brief : (any 1 out of 2) 2
 (1) Explain recursion with stack.
 (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 on : (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 of stack.
- 4** (a) Attempt the following : 4
 (1) Linked list is known as _____ data type.
 (2) Each entry in a linked list is called a _____.
 (3) _____ linked list can be performed traversal in both directions.
 (4) How many fields are in node of doubly linked list ? Name them.

- (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 of 2) 3
 (1) Write a program to perform reversing a linked list.
 (2) What is header linked ? Explain types of header linked list.
- (d) Write a note on : (any 1 out of 2) 5
 (1) Write an algorithm for following of doubly linked list: create, insert (at any place), delete (at any place), display.
 (2) Write a menu driven program to create singly linked list with following operation: Create(), Insertfirst(), Deletefirst(), Display().
- 5** (a) Attempt the following : 4
 (1) The root node has _____ parent node.
 (2) _____ is the greedy algorithm.
 (3) If an edge in graph has identical end points, it is called a _____.
 (4) MST stands for _____.
- (b) Answer in brief : (any 1 out of 2) 2
 (1) Explain the basic terminologies of binary tree.
 (2) Define BST.
- (c) Answer in detail : (any 1 out of 2) 3
 (1) Explain adjacency list and adjacency matrix representation of graph.
 (2) Explain classification of tree.
- (d) Write a note on : (any 1 out of 2) 5
 (1) Explain Graph traversal techniques in detail.
 (2) What do you mean by traversal of tree? Explain tree traversal methods in detail.
-