DBW-003-2042001 Seat No. _____

B. Sc. I.T. (Sem. II) Examination

July - 2022

CS-07(2019) : Data Structure Using C Language

Faculty Code : 003
Subject Code : 2042001

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

1 (a) Write answers for following questions. **4**

(1) Explain free() function.

(2) Explain Big-oh notation.

(3) Explain DFS.

(4) Explain time and space complexity.

(b) Answer in brief : (any one) **2**

(1) Explain malloc() function.

(2) Explain asymptomatic notation.

(c) Answer in detail : (any one) **3**

(1) Explain dangling pointer problem.

(2) Explain breadth first search.

(d) Write a note on any one : **5**

(1) Explain minimal spanning tree.

(2) Explain shortest path problem.

2 (a) Write answers for following questions : **4**

(1) Linear search is faster than binary search. State true/false.

(2) Binary search requires sorted elements. State True/false.

(3) Recursion is not used in quick sort. State True/false.

(4) Which design algorithm is used for quick sort ?

(b) Answer in brief : (any one) **2**

(1) Explain sequential search.

(2) Explain insertion sort.

(c) Answer in detail : (any one) **3**

(1) Explain bubble sort.

(2) Explain index search.

(d) Write a note on any one : **5**

(1) Explain binary search.

(2) Explain selection sort.

3 (a) Write answers for following questions : **4**

(1) Explain primitive and non-primitive data type.

(2) Explain linear and non-linear data structure.

(3) What is priority queue ?

(4) Explain stack operations.

(b) Answer in brief : (any one) **2**

(1) Write UDF of simple queue : insert()

(2) Write UDF of circle queue : insert())

(c) Answer in detail : (any one) **3**

(1) Write UDF of stack : display ()

(2) Write UDF of circle queue to delete : del ()

(d) Write a note on any one : **5**

(1) Write UDF of stack : push () and pop ()

(2) Write UDF of circle queue : display ()

4 (a) Write answers for following questions : **4**

(1) In a node of doubly linked list we can store value, address of next node and address of previous node. State True/False.

(2) Which type of pointer used to point to the address of the next element in a linked list ?

(3) Last node contains NULL value as an address in a singly linked list. State True/False

(4) In which linked list none of the nodes contains a NULL pointer ?

(b) Answer in brief : (any one) **2**

(1) Write UDF of singly linked list : insert node at beginning.

(2) Write UDF of singly circular linked list : insert ()

(c) Answer in detail : (any one) **3**

(1) Write UDF of singly linked list ; display ()

(2) Write UDF of doubly linked list : display ()

(d) Write a note on any one : **5**

(1) Write UDF of singly linked list : insert ()

(2) Write UDF of doubly linked list : display ()

5 (a) Write answers for following questions : **4**

(1) Explain leaf node.

(2) Explain sibling node.

(3) Explain height balanced tree.

(4) Explain root node.

(b) Answer in brief : (any one) **2**

(1) Explain post order tree traversal method.

(2) Explain searching process of binary search tree.

(c) Answer in detail : (any one) **3**

(1) Explain pre order tree traversal method.

(2) Explain deletion process of binary search tree.

(d) Write a note on any one : **5**

(1) Explain in order tree traversal method.

(2) Explain insertion process of binary search tree.
