



**DBW-003-2032001**

Seat No. \_\_\_\_\_

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

**July - 2022**

**CS-07 : Data Structure Using C Language**

**Faculty Code : 003**

**Subject Code : 2032001**

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

[Total Marks : 70

- 1 (a) Attempt the following questions. 4
- (1) \_\_\_\_\_ function is used for to dynamically allocate memory.
  - (2) DFS stands for \_\_\_\_\_.
  - (3) BFS stands for \_\_\_\_\_
  - (4) \_\_\_\_\_ used to dynamically de-allocate the memory.
- (b) Answer in brief : (any one out of two) 2
- (1) Define asymptotic notation.
  - (2) Define dangling pointer.
- (c) Answer in brief : (any one out of two) 3
- (1) Explain enumerated constant.
  - (2) Explain time and space complexities.
- (d) Answer in detail : (any one out of two) 5
- (1) Explain memory functions malloc, calloc and free.
  - (2) Explain graph traversal technique.
- 2 (a) Attempt the following questions : 4
- (1) In bubble sort each pair of adjacent elements is compared and the elements are swapped if they are not in order (True/False).
  - (2) \_\_\_\_\_ searching technique is very faster.
  - (3) A sequential search is made over all items one by one (True/False)
  - (4) Searching in data-structure refers to the process of finding a desired element in set of items (True/False).

- (b) Answer in brief : (any one out of two) **2**
- (1) What is bubble sort ?
  - (2) What is insertion sort ?
- (c) Answer in brief : (any one out of two) **3**
- (1) Explain bucket sort.
  - (2) Explain merge sort.
- (d) Answer in detail : (any one out of two) **5**
- (1) What is searching ? Explain binary searching.
  - (2) Write a program to implement selection sort.
- 3** (a) Attempt the following questions : **4**
- (1) Stack works on \_\_\_\_\_ method.
  - (2) Queue works on \_\_\_\_\_ method.
  - (3) FIFO stands for\_\_\_\_\_
  - (4) LIFO stands for \_\_\_\_\_
- (b) Answer in brief : (any one out of two) **2**
- (1) Explain pop function.
  - (2) Explain equeue function.
- (c) Answer in brief : (any one out of two) **3**
- (1) Explain postfix expression.
  - (2) Explain prefix expression.
- (d) Answer in detail : (any one out of two) **5**
- (1) Write a program to perform push, pop, display operation on stack.
  - (2) Explain linear and non linear structure.
- 4** (a) Attempt the following questions : **4**
- (1) \_\_\_\_\_ time complexity to count the number of elements in the linked list.
  - (2) \_\_\_\_\_ linked lists traversals can be performed in both directions.
  - (3) A linked list in which none of the nodes contains a NULL pointer is \_\_\_\_\_.
  - (4) \_\_\_\_\_ (number of) fields are there in node of singly linked list.

- (b) Answer in brief : (any one out of two) **2**
- (1) What is singly linked list ?
  - (2) What is doubly linked list ?
- (c) Answer in brief (any one out of two) **3**
- (1) Explain reversing of linked list.
  - (2) Explain types of linked list with advantages.
- (d) Answer in detail : (any one out of two) **5**
- (1) Write a program to perform insertion, deletion of nodes in singly linked list.
  - (2) Explain merging of linked list.
- 5** (a) Attempt the following questions : **4**
- (1) The node with no successor is called \_\_\_\_\_.
  - (2) The root has no parent node. (True/False)
  - (3) BST stands for \_\_\_\_\_.
  - (4) In \_\_\_\_\_ traversal method root node is visited first.
- (b) Answer in brief : (any one out of two) **2**
- (1) Write property of binary tree.
  - (2) Define preorder traversal of binary tree.
- (c) Answer in brief : (any one out of two) **3**
- (1) Explain height balanced tree.
  - (2) Explain b-tree algorithm.
- (d) Answer in detail : (any one out of two) **5**
- (1) Explain in order, post order traversal of binary tree.
  - (2) Explain binary search tree with its insertion and deletion operation.