

B.C.A Semester - 2 (CBCS) Examination**March/April- 2019 (Old Course)****CS-07 DATA STRUCTURE USING C LANGUAGE (CORE)****Time: 2:30 Hours****Marks: 70****Instructions:**

1. All questions are compulsory.
 2. Figures to the right indicate marks.
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- Q-1 (a) Answer the following questions [4]**
1. What is Best Case Analysis?
 2. _____function is use to free the memory allocate using malloc().
 3. What is UDF?
 4. What do you mean by passing parameter to function?
- (b) Answer the following questions (ANY ONE) [2]**
1. What is Union?
 2. What is Structure?
- (c) Answer the following questions (ANY ONE) [3]**
1. What is dynamic memory allocation? Explain malloc() and calloc().
 2. Explain Storage Classes.
- (d) Answer the following questions (ANY ONE) [5]**
1. What is Pointer? Explain Concept of Pointers.
 2. What is as Array? Explain Concept of Multidimensional Array.
- Q-2 (a) Answer the following questions [4]**
1. BFS stands for _____.
 2. DFS stands for _____.
 3. Define edges.
 4. Define vertices.
- (b) Answer the following questions (ANY ONE) [2]**
1. List out different types of Searching and Sorting methods.
 2. Any one Difference: Selection v/s Bubble sorting.
- (c) Answer the following questions (ANY ONE) [3]**
1. Explain minimal spanning tree.
 2. Explain Shortest Path problem.
- (d) Answer the following questions (ANY ONE) [5]**
1. Explain any one Sorting method with suitable example.
 2. Explain Binary Searching.
- Q-3 (a) Answer the following questions [4]**
1. Stack is _____ type of data structure. (Option: Linear or Non-Linear)
 2. Stack uses FIFO technique. State whether statement is true or false.
 3. When the PUSH operation is performed on the stack the value of TOS will be _____.
 4. List out Non-Linear type of Data structure.
- (b) Answer the following questions (ANY ONE) [2]**
1. Any one Difference : Stack v/s Queue
 2. List out operations available on Stack
- (c) Answer the following questions (ANY ONE) [3]**
1. What is Recursion?
 2. What is circular queue? Write its advantage over simple queue.
- (d) Answer the following questions (ANY ONE) [5]**
1. What is Queue? Explain it.
 2. What is Stack? Explain it.

- Q-4 (a) Answer the following questions [4]**
1. In Linked List each node contains _____ and _____ .
 2. What is circular List?
 3. A doubly linked list facilitates list traversal in _____ direction.
(Option: single or both)
 4. Define Linked-List.
- (b) Answer the following questions (ANY ONE) [2]**
1. What is Merging of Link list?
 2. Difference between Singly List and Doubly list.
- (c) Answer the following questions (ANY ONE) [3]**
1. What is Circular Link List?
 2. How link list is differs from an array?
- (d) Answer the following questions (ANY ONE) [5]**
1. Write a UDF or Algorithm to perform following operations on singly link list.
 - a. Create
 - b. Display
 - c. Insert first
 2. Write Applications of Link List.
- Q-5 (a) Answer the following questions [4]**
1. List out operations on Binary Tree.
 2. Define Binary Tree.
 3. Define root node.
 4. BST stands for _____.
- (b) Answer the following questions (ANY ONE) [2]**
1. Define: Leaf node and Level of binary tree.
 2. Explain properties of binary tree.
- (c) Answer the following questions (ANY ONE) [3]**
1. Explain Binary Search Tree with suitable example.
 2. What is Height Balanced Tree? Briefly explain it.
- (d) Answer the following questions (ANY ONE) [5]**
1. List various traversals of binary tree. Explain any one tree traversal.
 2. Explain deletion of node from binary search tree.
