

BCA-06

Data Structure through C Language

Bachelor of Computer Application (BCA-11/16/17)

Second Semester Examination 2019

Time : 3 Hours

Maximum Marks : 80

Note : This paper is of Eighty (80) marks divided into three (03) sections A,B and C. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section –A

(Long Answer Type Questions)

Note: Section 'A' contains four (04) long answer type questions of Nineteen (19) marks each. Learners are required to answer any two (02) questions only.

1. Write a C function for merging two sorted arrays.
2. a. Define Data Structure and List any four Linear Data Structure.
b. Define Algorithm. State different characteristics of Algorithm.
3. a. Sort the following data using insertion sort method. 30, 40, 10, 50, 70, 15, 45
b. Consider the following set of numbers sort them using quick sort method.
Clearly indicate the pivot element and partition at each step.

22, 45, 62, 34, 51, 24, 14, 53, 09.

- 4 What is Binary search Tree. Explain Insertion & Deletion in Binary Search Tree.

Section – B

(short-Answer- Type Questions)

Note : Section 'B' contains eight (08) short –answer type questions of Eight (08) marks each. Learners are required to answer four (04) questions only.

1. Define Queue. List various applications of Queue.
2. Write an algorithm to convert infix expression to prefix form.
3. Write a structure declaration for static stack.
4. Write a c funtion (recursive) for preorder, inorder, and post order traversals.
5. Write a c program for Tower of Hanoi problem.
6. Define stack. List and define various operations that can be performed on stack.
7. Write a function for creating singly circular linked list.
8. Define Graph with depth first search technique.

Section –C

(Objective-type-questions)

Note : Section 'C' contains ten (10) objective - Type questions of one (01) mark each. All the questions of this section are compulsory.

1. How is Data in a Queue accessed
 - (a) First in First out
 - (b) First in last out
 - (c) Last in First out
 - (d) None of these

2. A linear list of elements in which deletion can be done from one end (front) and insertion can take place only at the other end (rear) is known as a
 - (a) Queue.
 - (b) Stack.
 - (c) Tree.
 - (d) Linked list.
3. The data structure required for Breadth First Traversal on a graph is
 - (a) Queue
 - (b) Stack
 - (c) Array
 - (d) Tree
4. Let the following circular queue can accommodate maximum six elements with the following data front = 2 rear = 4 queue = _____; L,M,N,____,____ What will happen after ADD O operation takes place?
 - (a) Front =2 rear = 5 queue = _____; L,M,N,O,_____
 - (b) Front =3 rear =5 queue = _____; L,M,N,O,_____
 - (c) Front =3 rear =4 queue = _____; L,M,N,O,_____
 - (d) Front =2 rear =4 queue = _____; L,M,N,O,_____
5. Which of the following can a Dynamic Link Library contain?
 - (a) Only Code
 - (b) Code and Data only
 - (c) Code and Resources only
 - (d) Code, Data and Resources
6. In a circular linked list
 - (a) Components are all linked together in some sequential manner.
 - (b) There is no beginning and no end.
 - (c) Components are arranged hierarchically.
 - (d) Forward and backward traversal within the list is permitted.

7. If a node in a BST has two children, then its inorder predecessor has
- (a) No left child
 - (b) No right child
 - (c) Two children
 - (d) No child
8. The number of different directed trees with 3 nodes are
- (a) 2
 - (b) 4
 - (c) 3
 - (d) 5
9. Which of the following data structure is linear data structure?
- (a) Trees
 - (b) Graphs
 - (c) Arrays
 - (d) None of above
10. When new data are to be inserted into a data structure, but there is no available space; this situation is usually called
- (a) Housefull
 - (b) Saturated
 - (c) Underflow
 - (d) Overflow
