

**K-321**

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[Roll No. ....]

**BCA-06**

**Bachelor of Computer Application B.C.A.  
IInd Semester Examination Dec., 2023**

**DATA STRUCTURE THROUGH C  
LANGUAGE**

Time : 2 Hours]

[Max. Marks : 70

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*Note :- This paper is of Seventy (70) marks divided into two (02) Sections 'A' and 'B'. Attempt the questions contained in these Sections according to the detailed instructions given there in. Candidates should limit their answers to the questions on the given answer sheet. No additional (B) answer sheet will be issued.*

**Section-A**

**Long Answer Type Questions**      2×19=38

*Note :- Section 'A' contains Five (05) Long-answer type questions of Nineteen (19) marks each. Learners are required to answer any two (02) questions only.*

**K-321**

( 1 )

P.T.O.

1. What is binary tree ? Enlist and explain in brief about various binary tree traversal technique.
2. Write a compute program in C to create a single linked list. Write function to do the following operations :
  - (a) Insert a new node at the end
  - (b) Delete the first node
3. What do you mean by dynamic memory allocation ? How it is useful ? Explain malloc(), calloc(c), realloc(c) and free() with an example.
4. What is sorting ? Explain the various types of sorting.
5. What is queue ? Explain various operation on queue.

### **Section–B**

#### **Short Answer Type Questions**      4×8=32

**Note** :– Section ‘B’ contains Eight (08) Short-answer type questions of Eight (08) marks each. Learners are required to answer any *four* (04) questions only.

1. What is complexity of an algorithm ? Explain the meaning of worst case analysis and best case analysis with an example.
2. Write short note on the following :
  - (i) Directed graph and complete graph
  - (ii) Stack and array

3. Explain circular queue. Explain the process of insertion of a new element in circular queue.
4. What is binary tree ? Explain preorder and postorder tree traversal algorithm by taking suitable examples.
5. Explain breadth first search technique in a graph.
6. Explain linked list representation of queue.
7. How will you perform B-tree searching ?
8. Explain one dimensional and two dimensional arrays. How they are implemented.

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