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Roll No.

BCA-06
Data Structure through
C Language
Bachelor of Computer Applications
(BCA-11/16/17)
Second Semester
Examination, 2019

Time : 3 Hours

[Maximum Marks : 80

Note : This paper is of Eighty (80) marks divided into two (02) Sections A and B. Attempt the questions contained in these sections according to the detailed instructions given therein.

Section–A

(Long Answer Type Questions)

Note : Section A contains Five (05) long-answer-type questions of Fifteen (15) marks each. Learners are required to answer any three (03) questions only. **(3×15=45)**

1. (a) What do you mean by abstract data type? Explain it. (3)

(2)

- (b) What is the difference between Malloc () and Calloc (). (3)
 - (c) What is a pointer ? How is a pointer initialized ? (4)
 - (d) What is a self-referential structure? For what kind of applications are self-referential structures useful? (5)
2. Write an algorithm for Merge sort. Also give its complexity.
 3. Why Binary search is better than Linear search? Write the algorithm of Binary search and its complexity.
 4. (a) Describe the insertion procedure in a single linked list. (7)
(b) Describe the delete operation in a single linked list. (8)
 5. What do you understand by binary tree? Explain the basic terminology. Discuss extended binary tree with example.

(3)

Section–B

(Short-Answer-Type Questions)

Note :Section ‘B’ contains Eight (08) short-answer-type questions of Seven (07) marks each. Learners are required to answer any Five (05) questions only. **(5×7=35)**

1. Give a brief description of traversing, sorting and searching.
2. Explain the best case, worst case and average case of algorithm ?
3. Discuss the notion of algorithm. Write an algorithm to find factorial of a given number.
4. Given an integer K, write a procedure which deletes the Kth element from the list.
5. What are the differences between linear and non-linear data structure? Give example.
6. What are the various application areas of STACK? Explain with example.
7. Write a program in C to convert a given infix expression P into postfix expression Q
8. What is the purpose to use linked list? What are self referential structures? Explain.