

**BACHELOR OF COMPUTER
APPLICATIONS (BCA)**

Term-End Examination

June, 2020

**CS-62 : 'C' PROGRAMMING AND DATA
STRUCTURE**

Time : 2 Hours

Maximum Marks : 60

Note : (i) Question No. 1 is compulsory.

(ii) Answer any three questions from the rest.

(iii) All algorithms should be written nearer to 'C' language.

1. (a) What are arrays ? How are two-dimensional arrays stored in memory ? Write an algorithm to add two 2-dimensional arrays. Make necessary assumptions. 8

(b) Write the algorithm for linear search. Also, apply this algorithm on the following data :

98, 102, 60, 75, 83, 110

Show all possible steps. Input will be key value. 8

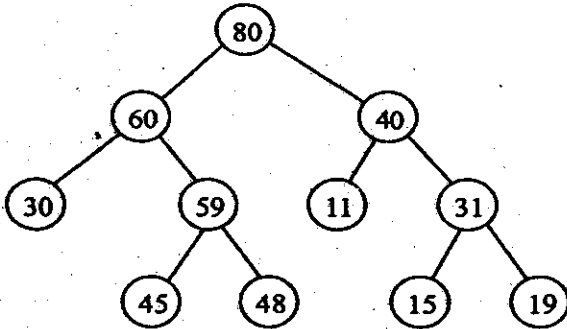
- (c) Write an algorithm to convert any infix expression to its corresponding postfix notation. Using this algorithm, convert the following expression to postfix expression : 8

$$(a * b) + b / d$$

- (d) Define the term "Tree". Also define the term "Binary Tree". Explain the differences between them using an example. 6
2. (a) What is a Singly Linked List ? Write an algorithm to insert a node into singly linked list. 6
- (b) Write an algorithm to delete a node from a queue. 4
3. (a) Explain the process of converting a Tree into a Binary Tree, with the help of an example. 8
- (b) Explain Row Major Order of arrays. 2

[3]

- What is Heap Sort ? Apply heap sort on the following given data : 5



- (b) Write an algorithm that accepts a string as input and counts the number of those characters in it which are not vowels. 5

5. Write short notes on the following : 2 each

- (a) Forest
- (b) Binary Search
- (c) Doubly Linked List
- (d) Stack
- (e) Height of a Binary Tree