

Time : 3 Hours

Max. Marks : 60

The candidates shall limit their answers precisely within the answer-book (10 pages) issued to them and no supplementary/continuation sheet will be issued.

Note : Candidates are required to attempt five questions in all selecting one question from each of the sections A, B, C and D of the question paper and all the subparts of the question in section E.

SECTION - A

1. Write short notes on the following:
 - (a) Constant
 - (b) Constant argument
 - (c) Constant data member
 - (d) Constant function (4×3=12)
2. What are the different types of data structures? Give examples and explain features of each type. (12)

SECTION - B

3. Create a stack class and use it for converting an infix expression to prefix and postfix. (12)
4. Write an algorithm for the following:
 - (a) Creating a linked list.
 - (b) Inserting a node at beginning and at end.
 - (c) Deleting a node from beginning and from end.
 - (d) Using the linked list for implementing double ended queue. (4×3=12)

SECTION - C

5. Create a binary search tree using the following values and traverse the tree using pre-order, in-order and post-order traversal techniques:
56 74 32 79 64 24 9 30 48 79 60 50 (12)
6. Write an algorithm for implementing heap sort using min heap. (12)

SECTION - D

7. Discuss in detail the Indexed Sequential Access Method. (12)
8. Write an algorithm for implementing quick sort. (12)

SECTION - E

9. All questions are compulsory.
 - (a) What is the reference variable in C++?
 - (b) Define abstraction.
 - (c) What do you mean by operator overloading?
 - (d) Distinguish between linear and non-linear data structures.
 - (e) What is the difference between row major and column major orders?
 - (f) How an inverted linked list is implemented?
 - (g) Distinguish between binary search tree and height balanced tree.
 - (h) What are the different types of queues?
 - (i) Define threaded tree.
 - (j) How collision is resolved in hashing?
 - (k) Define asymptotic notation.
 - (l) What is the pre-requisite for implementing binary search? (12×1=12)