

2015/R24/PMCA15

NOVEMBER 2020

DATA STRUCTURE USING C++

Time : Three hours

Maximum : 75 marks

SECTION A — (7 × 5 = 35 marks)

Answer ALL questions choosing either (a) or (b).

1. (a) Define the following terms:

- (i) Data abstraction
- (ii) Data encapsulation
- (iii) Abstract data type
- (iv) Stream
- (v) Algorithm.

Or

(b) Describe the structure of C++ program.

2. (a) What are the two parameter passing methods in C++? Explain.

Or

(b) What do you mean by function overloading in C++? Give an example.

3. (a) Write a short note on singly linked list.

Or

(b) Write a procedure to creating a linked list.

4. (a) What is a circular list? Explain.

Or

(b) Write a procedure for preorder binary tree traversal.

5. (a) Define the term "Tree". Define any five terminologies related to Tree.

Or

(b) Describe the union and find operations of Set representation.

6. (a) Write a short note on Leftist Trees.

Or

(b) What is Fibonacci Heaps? Explain.

7. (a) What is a 2-3-4 tree? Give an example.

Or

(b) Define: Red-black tree. Give an example.

SECTION B — (4 × 10 = 40 marks)

Answer ALL questions choosing either (a) or (b).

8. (a) What are the phases of system life cycle? Explain.

Or

- (b) What is a Queue? Explain about the queue abstract data type.

9. (a) Discuss about the singly linked list with doubly linked list.

Or

- (b) Write a procedure to insert and delete an element in a linked stack and explain.

10. (a) What are the properties of B-Tree? Explain.

Or

- (b) What are the ways to represent a binary tree? Explain with examples.

11. (a) What is a binary search tree? Write a procedure to insert an element into a binary search tree and explain it.

Or

- (b) Write a procedure to insert an element into a Red-Black tree and explain.