20MCU11

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2022
(Third Semester)

Branch – **MATHEMATICS WITH COMPUTER APPLICATIONS**
DATA STRUCTURES USING C++

Time: Three Hours Maximum: 50 Marks

SECTION-A (5 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (5 x 1 = 5)

1. What is C++?
   (i) C++ is an object oriented programming language
   (ii) C++ is a procedural programming language
   (iii) C++ supports both procedural and object oriented programming language
   (iv) C++ is a functional programming language

2. Which concept allows you to reuse the written code in C++?
   (i) Inheritance (ii) Polymorphism
   (iii) Abstraction (iv) Encapsulation

3. Which of the following correctly declares an array?
   (i) int array[10]; (ii) int array;
   (iii) array{10}; (iv) array array[10];

4. Which of the following is a linear data structure?
   (i) Array (ii) AVL Trees
   (iii) Binary Trees (iv) Graphs

5. When a pop() operation is called on an empty queue, what is the condition called?
   (i)Overflow (ii)Underflow
   (iii)Syntax Error (iv)Garbage Value

SECTION - B (15 Marks)
Answer **ALL** Questions
ALL Questions Carry **EQUAL** Marks (5 x 3 = 15)

6 a. Explain function overloading?

OR

b. What is the role of protected access specifier?

7 a. Explain copy constructors.

OR

b. What is the purpose of using a destructor in C++?

8 a. Analyse Data structures operations.

OR

b. Describe Linear search traversing.

Cont...

9 a. Explain Polish Notation.

OR

b. Explain the operation of PUSH operation.

10 a. Explain the complexity of sorting algorithms.

OR

b. Explain Insertion sort with example.

SECTION -C (30 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 x 6 = 30)

11 a. Explain (i) Inline functions (ii) Member functions

OR

b. Write a C++ program add 2 members of two different classes using friend functions.

12 a. Explain (i) Multi level inheritance (ii) Multiple inheritance with examples.

OR

b. Discuss Pointers in C++.

13 a. Explain Binary search concept.

OR

b. Enumerate Multidimensional arrays.

14 a. Explain in detail about stack representation.

OR

b. Discuss Array representation of queues.

15 a. Survey about Merge sort.

OR

b. Describe Radix sort with example.

Z-Z-Z END