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**BCS-031**

**BACHELOR OF COMPUTER**

**APPLICATIONS**

**(BCA)**

**Term-End Examination**

**June, 2024**

**BCS-031 : PROGRAMMING IN C++**

*Time : 3 Hours*

*Maximum Marks : 100*

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***Note :** Question No. 1 is compulsory and carries 40 marks. Attempt any **three** questions from the rest.*

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1. (a) Differentiate between structured and object oriented programming paradigms. 5

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- (b) Explain the use of private and protected access specifiers. 5
- (c) What do you mean by runtime polymorphism ? How is it achieved ? 5
- (d) What is the inline member function ? Why do we declare the member function as inline ? 5
- (e) Explain the working of for loop with the help of an example C++ program. 5
- (f) What is an object ? How is it passed as a parameter ? 5
- (g) Explain seekg( ), seekp( ), tellg( ), tellp( ) functions of stream classes. 5
- (h) How are the constructors of base class invoked by derived class constructors ? Discuss with reference to parameterized constructors. 5

2. (a) What are static data member and static member function ? Write a program to explain the benefit of using static members in C++. 10
- (b) Differentiate between function overloading and function overriding. Explain with the help of C++ program. 10
3. (a) What do you mean by template function ? What are its benefits ? Write down code for a template function to swap values of two numbers. 10
- (b) Write a program to add and subtract two instances of a complex number class (having data members real and imaginary). Make use of a friend function for the same. The class should make use of a parameterized constructor for creating and initializing the data members. 10

4. Write short notes on the following :  $4 \times 5 = 20$
- (a) Exception handling
  - (b) Inheritance
  - (c) Relational and logical operators
  - (d) File stream classes
5. (a) How can a class be made abstract ? Take a suitable example to demonstrate the behaviour of a pure virtual function. 10
- (b) Write a program to overload  $+$  and  $*$  operators for complex number class (data members are real and imaginary for the class). 10