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**BCS-031**

**BACHELOR OF COMPUTER  
APPLICATIONS (BCA) (REVISED)**

**Term-End Examination**

**December, 2022**

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

*Time : 3 Hours*

*Maximum Marks : 100*

*Weightage : 75%*

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**Note :** *Question number 1 is compulsory and carries 40 marks. Attempt any **three** questions from the rest.*

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1. (a) What is Encapsulation ? Are encapsulation and information hiding the same ? Explain.  
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- (b) What is an Exception ? How is it handled in C++ ? Explain with the help of an example.  
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- (c) What are containers ? Explain the use of list container class with the help of an example. 5
- (d) Differentiate between copy constructor and default constructor in C++, with the help of an example for each. 5
- (e) “Abstract class provides a base, upon which other classes may be built.” Justify the statement with the help of an example. 5
- (f) What is a member function ? Briefly discuss the purpose of member function in C++, with suitable example. 5
- (g) What is ‘this’ pointer ? Explain the significance of ‘this’ pointer with the help of an example program. 5
- (h) What are static data members of a class ? Explain the characteristics of static data members. 5
2. (a) What is function overloading ? Explain how it is implemented in C++ with the help of a program. 10

- (b) What is a class template ? Give *two* advantages of class template. Create a class template for a linked list data structure. 10
3. (a) What is operator overloading ? Write a C++ program to overload '+' operator to find the sum of two complex numbers. Support your program with suitable comments. 10
- (b) What is a friend function ? How does it differ from the member function ? Explain the implementation of friend function in C++, with the help of an example program. 10
4. (a) What is inheritance ? Briefly discuss the different types of inheritance, supported by C++. Explain how inheritance is implemented in C++. 10
- (b) What is the difference between call by value and call by reference in a user defined function in C++ ? Give an example to illustrate the difference. 10

5. Write short notes on the following with example for each : 4 each

- (i) Pure virtual functions
- (ii) Message passing
- (iii) Inline function
- (iv) Destructors and their need
- (v) Relational operators in C++