

No. of Printed Pages : 5

**BCS-031**

**BACHELOR OF COMPUTER  
APPLICATIONS (REVISED)**

**(BCA)**

**Term-End Examination**

**June, 2025**

**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) List any *five* features of object oriented programming. Also, compare object oriented programming with procedural programming. 5

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- (b) What do you understand by scope of a variable ? Compare global variable and local variable in C++, with suitable example code. 5
- (c) What are the static members of a class ? Discuss the utility of having static members with the help of an example. 5
- (d) What is Standard Template Library (STL) ? Briefly discuss the components of STL. 5
- (e) Compare virtual functions with pure virtual functions. Give an example of each. 5
- (f) What is operator overloading ? Write a program in C++ to overload '+' operator to add two complex numbers. 5

- (g) What are destructors in C++ ? Explain the role of destructors in memory management with suitable example code in C++. 5
- (h) What is polymorphism ? Give advantages of polymorphism. 5
2. (a) What are stream manipulators ? Explain the use of `setw()` and `setprecision()` as a stream manipulation. 5
- (b) Explain, how constructor overloading is performed in C++ with the help of an example. 5
- (c) What are inline functions ? Discuss the utility of inline functions with suitable example. 5

- (d) What is an access specifier ? Explain different types of access specifiers available in C++. 5
3. (a) Write a program in C++ to define a class “Teacher” with a virtual function “Salary”. Derive the class “Assistant Professor” from the class “Teacher” and implement the salary function. Make necessary assumptions. 10
- (b) What is inheritance in C++ ? Explain different types of inheritance in C++. 10
4. (a) Write a program in C++ to open an existing file and insert the text “file program in C++” at the end of the file. 10
- (b) What is ‘this’ pointer in C++ ? Explain the significance of ‘this’ pointer with the help of an example program. 5

- (c) Differentiate between early binding and late binding with an example for each. 5

5. Write short notes on the following :  $4 \times 5 = 20$

- (a) Class template and its utility
- (b) Exception handling and its purpose
- (c) Copy constructor and its utility
- (d) Multiple inheritance
- (e) Containers and their utility in C++

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