

**U.G. 2nd Semester Examination - 2022****COMPUTER SCIENCE****[HONOURS]****Course Code : COM.SC-H-CC-L-203****(Programming in C++)**

Full Marks : 60

Time :  $2\frac{1}{2}$  Hours*The figures in the right-hand margin indicate marks.**Candidates are required to give their answers in their own words as far as practicable.***GROUP-A**

1. Answer any **ten** questions :  $2 \times 10 = 20$
- a) What is the advantage of user-defined copy constructor over default copy constructor?
  - b) When do we need to make a class virtual?
  - c) Why are cin and cout not considered as keywords?
  - d) Explain the role of streams in C++.
  - e) Differentiate between early binding and late binding.
  - f) Is it possible to realise late binding of an operator on a user defined class? Justify.

*[Turn over]*

- g) Explain manipulator.
- h) What is the relation between a Class and an Object?
- i) What does it mean that friends are not virtual?
- j) How is template function advantageous over function overloading?
- k) Explain containership.
- l) Justify if it is possible to have an object of more than one distinct classes.
- m) Is it possible to have virtual constructor? Justify.
- n) Justify or falsify – “Declaration of a constructor must be accompanied by that of a destructor”.
- o) Justify if it is possible to declare a constructor having arguments passed as template?

**GROUP-B**

- Answer any **four** questions :  $5 \times 4 = 20$
- 2. When do you declare a member of a class static? What do you mean by manipulators in C++? Give some examples.  $2+3=5$
  - 3. What is a parameterized constructor? Is it mandatory to use constructors in a class?  $3+2=5$

4. What is a friend function? “Use of friend function and encapsulation are contradictory”- comment critically.  $2+3=5$
5. Why is reference of an object used in copy constructor? Write a program in C++ to pass arguments to the constructor of a base class from the constructor of the derived class.  $2+3=5$
6. What is 'this' pointer? Write a program to return an object using 'this' pointer. What is a const member function? Why is it used?  $1+2+1+1=5$
7. What is operator overloading? Mention some rules for overloading operators. Write a program to overload + and – operators as unary operator.  $1+2+2=5$

### GROUP–C

Answer any **two** questions :  $10 \times 2 = 20$

8. a) What do you mean by a default arguments function? Explain.
- b) What is an inline function? Mention its advantages and pitfalls.
- c) What are the ambiguities that arise in multiple and diamond-shaped inheritance? How can they be resolved?  $2+4+4=10$

9. a) Explain constructor overriding.
- b) Distinguish multiple inheritance from multilevel inheritance with suitable examples.
- c) Write a program to create a template function for Bubble sort.  $2+3+5=10$
10. a) Define a class “COMPLEX” of complex numbers. Write the operator function to overload the operator “+” to be used for addition of two objects of COMPLEX.
- b) Create two text files COUNTRY and CAPITAL. COUNTRY file contains name of at least five countries and CAPITAL file contains names of the corresponding capitals. Write a program in C++ to get the output in the following form:  
The Capital of India is New Delhi and so for other.  $(2+3)+5=10$

11. Write short notes on any **two** of the following:  $5 \times 2 = 10$

- a) Namespace
- b) Exception handling
- c) ADT
- d) Input and output pointers in C++