

SEMESTER EXAMINATION-2021
CLASS – BCS-C101 SUBJECT: COMPUTER SCIENCE
PAPER CODE: OBJECT- ORIENTED PROGRAMMING IN C++

Time: 3 hour

Max. Marks: 70

Min. Pass: 40%

Note: Question Paper is divided into two sections: **A and B**. Attempt both the sections as per given instructions.

SECTION-A (SHORT ANSWER TYPE QUESTIONS)

Instructions: Answer any five questions in about 150 words each. Each question carries six marks.

(5 X 6 = 30 Marks)

- Question-1: What is an Algorithm? Write an algorithm to find the largest of 3 numbers.
- Question-2: Compare and contrast *for*, *while* and *do-while* looping statements.
- Question-3: What do you mean by pure virtual functions? What do you mean by pure virtual functions? Also, list any four Operators that cannot be overloaded.
- Question-4: What are basic data types available in C++? Write the significance of each data type.
- Question-5: What happens when a raised exception is not caught by catch block?
- Question-6: What is an expression? Evaluate the following expressions:
(a) $100 \% 20 <= 21 - 5 + 100 \% 10 - 20 == 5 >= 1 != 20$
(b) $a + = b * = c - = 5$; where $a = 5$ $b = 3$ and $c = 8$
(c) $a - (b++) * (--c)$; where $a = 2$, $b = 3$, and $c = 7$
(d) $a * (++b) \% c$; where $a = 2$, $b = 3$, and $c = 11$
(e) $a += a++ - ++b + a$ where $a = 2$, and $b = 9$
(f) $a=1/3*3$;
- Question-7: Write an object- oriented program to read N integers into an array A and to find the
- sum of odd numbers,
 - sum of even numbers,
 - average of all numbers.
- Output the results computed with appropriate headings.
- Question-8: Compare and Contrast late binding and early binding.
- Question-9: What are the different ways to define member functions of a class. What is the role of scope resolution operator in the definition of member function?

Question-10: List some of the special properties of constructor function. Also, describe the importance of destructor.

SECTION-B (LONG ANSWER TYPE QUESTIONS)

Instructions: Answer any FOUR questions in detail. Each question carries 10 marks.
(4 X 10 = 40 Marks)

Question-11: Write an object- oriented program that takes three coefficients (a, b, and c) of a quadratic equation (ax^2+bx+c) as input and compute all possible roots and print them with appropriate messages.

Question-12: Write a C++ program involving input/output using overloaded operators << and >> and member functions of I/O stream classes.

Question-13: What is Recursion? Write a C program to compute polynomial coefficient ${}_nC^r$ using recursion.

Question-14: Write an object- oriented program that defines a structure employee containing the details such as empno, empname, department name and salary. The structure has to store 20 employees in an organization. Use the appropriate method to define the above details and define a function that will display the contents?

Question-15: Write a C++ program using function template to find the product of two integer or floating-point type of data.

Question-16: Write an object- oriented program for arithmetic operator of manipulating vectors.

Question-17: Write a C++ program to demonstrate exception handling by dividing a number with zero.

Question-18: Consider an example of declaring the examination result. Design three classes: **Student**, **Exam** and **Result**. The **Student** class has data members such as those representing registration number, name etc. Create a class **Exam** by inheriting the student class. The **Exam** class adds data members representing the marks scored in six subjects. Derive class **Result** from the **Exam** class and it has own data members such as *total_marks*. Write an interactive program in C++ to model this relationship. What type of inheritance is this model belongs to?

Paper Code: BCS-C101