SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN
(AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai - 600 044.
B.Sc.Statistics - END SEMESTER EXAMINATIONS - APRIL 2025
SEMESTER - III
20USTAT3003 - Programming in C++

Total Duration : 2 Hrs.30 Mins. Total Marks : 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Explain the different stages of a C++ program compilation process.
2. Summarize the concept of tokens in C++. List different types of tokens with examples.
3. Describe break and continue statements with examples in nested loops.
4. Define a constructor. How is it different from a normal function?
5. Write a C++ program that performs division of two numbers and:
   a) Throws an exception if the denominator is 0.
   b) Catches and handles the exception using try-catch.
   c) Extends the program to catch a custom exception if the numerator is negative.
6. Distinguish structured programming with OOP. Provide a C++ example to demonstrate encapsulation.
7. Implement a C++ program that takes two numbers as input and performs all arithmetic operations (+, -, *, /,%).
8. Write a C++ program that overloads a function add() to:
   a) Add two integers
   b) Add two floating-point numbers
   c) Concatenate two strings

Section C

Answer any **THREE** questions $(3 \times 10 = 30$ Marks)

9. Discuss different methods of input/output operations in C++ using cin/cout, gets/puts, getchar/putchar, and getc/putc with examples.
10. Discuss the mathematical functions available in C++. Write a C++ program to demonstrate at least four of them.
11. Demonstrate the difference between if, if-else, and switch statements with examples.

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12. Modify your C++ program for mean, median, and variance to handle large datasets using dynamic memory allocation.

13. Write a C++ program for given scenario. Consider a university hierarchy where:
    a) Person is the base class with name and age.
    b) Student derives from Person and adds student ID.
    c) Teacher derives from Person and adds subject.
    d) Teaching Assistant inherits from both Student and Teacher.
    e) Implement this structure in C++ and resolve ambiguity using virtual base classes.

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