

INDIAN INSTITUTE OF TECHNOLOGY TIRUPATI
DEPARTMENT OF MATHEMATICS AND STATISTICS

Class Test - 3 (Theory) **MA517M-Basic Programming Laboratory** 01 September 2026
Name _____ Roll No.: MA26M

Answer All Questions $8 \times 0.25 = 2$

Definition 1.1 (Code Snippet). A code snippet is a short, self-contained fragment of code that demonstrates or performs one specific task. It is not a full program. It usually assumes the surrounding context (headers, main, variable declarations) exists elsewhere.

For example, the following is a C++ Code snippet for checking whether a given number is even or odd. Four lines are doing exactly one job. It assumes n is already declared and `<iostream>` is already included, so it cannot compile on its own.

```
// Snippet: test whether n is odd or even
if (n % 2 == 0)
    std::cout << n << " is even\n";
else
    std::cout << n << " is odd\n";
```

1. Consider the quadratic equation $ax^2 + bx + c = 0$ with $a \neq 0$. Assume a, b, c are already declared as `double` and hold valid values. Write a C++ code snippet that computes the discriminant and prints `Real roots` or `Complex roots`, using `if..else`.

2. State the syntax of the ternary (conditional) operator in C++.

3. Rewrite the classification of Question 1 using the ternary operator in a single `std::cout` statement, producing the same two messages.
4. Write the general syntax of a `switch` statement in C++. Answer the following:
 - (a) What is the purpose of the `default` label?
 - (b) What happens if the `break` statement is omitted from a case?
5. Assume three integers `a`, `b`, `c` are already declared and initialised. Write a C++ code snippet that finds and prints the smallest of the three using nested `if..else` statements only (do not use `std::min`).