Exam # 1 Topics

**C++ Language Features**

1. Variable declarations and program structure
2. Input from the keyboard (cin) and output to the screen (cout). Use of stream operators `>>` and `<<`.
3. Methods `cin.fail()` and `cin.eof()`
4. String constants, e.g., "Hello".
5. Intrinsic data types: `char`, `bool`, `short`, `int`, `long`, `long long`, `unsigned`, `float`, `double`, and `long double`
6. Comparison operators: `<`, `<=`, `>`, `>=`, `==`, and `!=`
7. Control constructs
   (a) `if ... else`
   (b) `while` loops
   (c) `do ... while` loops
   (d) `for` loops
8. Logical operators
   (a) Logical AND: `&&`
   (b) Logical OR: `||`
   (c) Logical NOT: `!`
9. Arithmetic operators: `+`, `-`, `*`, `/`, and `%`
10. One Address Operators
    (a) Pre-increment, e.g., `++k`
    (b) Pre-decrement, e.g., `--k`
    (c) Post-increment, e.g., `k++`
    (d) Post-decrement, e.g., `k--`
11. Integer divide and mixed mode expressions
12. Defining functions, return types, including `void`
13. Calling functions
14. The `return` statement
15. **Formal parameters** and **actual parameters** (also known as `parameters` and `arguments`).
16. `#include`
17. Namespaces, Scope, using namespace std
18. exit(1);
19. C-style printf() and scanf()
20. Pass by value and pass by reference in C++
21. Pointers and the “address of” operator &
22. Pass by reference using pointers
23. Keyword static
24. Keyword const, use in formal parameters
25. 1-D fixed length arrays

**Stack Based Memory Organization**

26. Activation records, the system stack, function calls

**Algorithms**

27. General Method for Linear Search

**Problem Solving Skills**

28. Write a short C++ function to solve a problem