Question 1

1.1 Machine language is a low level language which is used to control the cpu
1.2 A class is like a blueprint for creating objects
1.3 This is the concept of concealing data that is not necessary to the user
1.4 Software that user uses to complete a certain task other than interacting with the machine itself
1.5 Is a set of rules which govern and define how data is processed and how actions are executed
1.6 Is the process of finding and fixing errors in programming code
1.7 Is a set of instructions that a computer can run
1.8 Is a program which translates programming code into machine code
1.9 Is a system of notation for writing computer programs
1.10 The names your use for variables, types, functions and labels in your program

Question 3

Variable scope determines the visibility and accessibility of a variable within a program.

The rules that determine variable scope are as follows:

- Local variables are accessible only within the block of code in which they are defined.
- Global variables are accessible from anywhere within the program.
- If a local variable has the same name as a global variable, the local variable takes precedence within the block of code in which it is defined.
- Nested blocks of code can have their own local variables, which can only be accessed within that block and its nested blocks.
- In some programming languages, variables can also have function or block scope, which determines their accessibility within those specific scopes.

Understanding variable scope is important for writing clean, efficient, and bug-free code.

Question 4

The characteristics of a constant are:

- Once a constant is defined, its value cannot be modified.
- Constants are usually declared using the const keyword.
- Constants can be used to make code more readable and maintainable by providing a descriptive name for a value that is used throughout the program.
- Constants are often used to store values that are unlikely to change, such as mathematical constants or configuration settings.
- Constants can improve program performance by allowing the compiler to optimize code that references the constant.
- Constants are typically scoped at the same level as variables and follow the same scoping rules.

Question 5

```
static void Main(string[] args)
{
    string a = "Hello World";
    Console.WriteLine(a);
}
```

Question 6

Initialization is the process of assigning an initial value to a variable when it is created.

Two methods for ensuring that variables are initialized before use are:

1. Initializing the variable when it is declared: This involves assigning a value to the variable at the same time it is declared. For example, **int x = 0;** initializes the integer variable **x** to 0 at the time of declaration.
2. Using a constructor or initialization function: This involves creating a constructor or initialization function that initializes the variable to a default value or a value passed in as a parameter. The constructor or initialization function is then called when the object is created. For example, in object-oriented programming, a class constructor can be used to initialize member variables when objects of the class are created.

Ensuring that variables are properly initialized before use is important for preventing errors and bugs in a program. Uninitialized variables can lead to undefined behavior and cause unexpected program crashes or incorrect results.

Question 7

Value of a is:20

Value of a is:21

Value of a is:22

Value of a is:23

Value of a is:24

Value of a is:25