**OOPS CONCEPT QUESTIONS**:

1. Create a class **Box** that calculates the volume given the dimensions. The class must contain the 3 double variables **length, width and height**, one method **calculateVolume()** and a parametrized constructors ( **Box(double length, double width, double height)**)to initialize the values of the variables.

**Note: Use the names and declarations as given in the question**

2. Create a class to implement the functionality of a Stack.

**Class Specification:**

1. **2 members (int stack[], int tos). Tos => top of stack**
2. **2 methods push(int) and pop()**

**Note: Explore about stack if you are not aware of them.**

3. Implement a program making use of at least 10 built-in String Class methods.

4. Implement a class that contains the following methods:

**1. int add(int a,int b)**

**2. int add(int a,int b, int c)**

5. Implement a class that contains the following methods:

**1. int add(int a, int b)**

**2. double add(double a, double b)**

6. Implement a class that contains the following methods:

**1. int add(int a, int b)**

**2. double add(int a, int b)**

7. Implement a class that contains the following methods:

**1. void sum(int a,long b)**

**2. void sum(long a,int b)**

8. Implement constructor overloading for a class Box.

**Variables – length, width and height**

**Constructors – Box(), Box(len, width, height), Box(val)**

**Note: the third constructor assigns the same value to all 3 variables.**

9. Implement the following Class to perform object comparison

**Class Test {**

**Int a,b;**

**Boolean equalTo(<object of type Test>)**

**// Compare the value of the a,b in the object parameter with the class variables and return true if they are equal else return false.**

**}**

10. Implement a class that contains a method to **calculate a factorial of a number using recursion**.

11. Implement a class that contains following:

**1. 2 static variables a= 3 and b.**

**2. 1 static method meth(x) that prints the value of x,a,b**

**3. 1 Static block to initialize the value of b.**

**4. main() method inside which you call meth(x)**

12. Implement a class that has 3 **final** variables and a method to print the variables. The implementation must be done in 2 way. In the first implementation, initialize the variables directly. In the second implementation, initialize the variables using a constructor.

13. Implement inheritance using the following specifications:

**Class A{**

**Int I,j;**

**Print\_i\_j(){**

**// print the values of I,j**

**}**

**}**

**Class B inherits A{**

**Int k;**

**Print\_k(){**

**// prints the value of k**

**}**

**Sum\_I\_J\_K(){**

**// calculate the sum of I,j,k**

**}**

**}**

**New class{**

**Main(){**

**// create obj for A**

**// create obj for B**

**// initialize I,j for A**

**// initialize I,j,k for B**

**// call print for both A and B**

**// call sum for B**

**}**

**}**

14. Implement the following:

**Class A{**

**Private int a;**

**Int b;**

**Set (int a, int b){**

**// initialize a, b**

**}**

**}**

**Class B inherits A {**

**Sum(){**

**// add the values of a and b;**

**}**

**}**

15. Implement the following:

**Class A{**

**Final void meth(){**

**Sysout(“something”)**

**}**

**}**

**Class B inherits A {**

**Override the method meth()**

**}**

16. Implement the following

**Final class A{**

**}**

**// Create a class named B that inherits A**

17. Implement 2 classes A,B with the following specifications:

**1. B must inherit A**

**2. Both the classes must have constructors() with sysout**

**3. Manually call the constructor of class A from class B.**

18. Implement 3 classes with the following specifications:

**1. B must inherit A. C must inherit B.**

**2. All 3 classes must have constructors() with sysout**

**3. Create an object of C in the main()**

Note: Observe the order of the print statements and provide an explanation

19. Extend the Integer class and override the toString() method.

20. Implement 3 classes with the following specifications:

**1. C must inherit A and B.**

**2. Classes A and B must contain the method fun()**

**3. Class C must override fun()**

**Note: Observe what happens during compile time, if you get any errors give an explanation for the errors.**