

# ***Tutorials for Object Oriented Programming Paper***

## **B.Tech 3<sup>rd</sup> Year**

**The following set of tutorials covers all topics taught in Java and C++**

### **A. On C++**

1. What is the difference between 'const char \*p' and 'char const \*p'?
2. What is a 'const' member function?
3. Define a copy constructor. Why is it used? Why do we need a reference argument in a copy constructor?
4. What is a friend function? When is it used?
5. What is an explicit constructor? Where is it used?
6. How does one initialize a const member variable of a class?
7. What is a static member of a class? How memory is allocated for a static member?
8. What are conversion operators? What is their syntax? What are overloaded operators? What is the syntax of prefix overloaded unary operator and postfix overloaded unary operator? Explain with example.
9. When do we pass arguments by value and when by reference?
10. What is a 'void' type pointer?
11. What is an abstract class? What is a virtual function? When do we use a pure virtual function?
12. What is run time polymorphism and compile time polymorphism?
13. Define and explain the concepts of data abstraction, encapsulation, polymorphism, modularity, top down developmental approach, bottom up developmental approach etc.

## **B. Java Basics**

1. Define a package. How can you make a class member of a package? Why do we do not always import all packages in a java program?
2. What is an abstract class and an abstract methods in java?
3. Define a java interface. Can we use abstract definition for java interfaces? If not why?
4. What in an interface? How does it differ from an abstract class? Why do we use interfaces in java?
5. Explain with the help of an example how interfaces can be used as a data type?

## **C. Java Threads**

1. Explain what do you mean by threading?
2. What are the advantages of threading?
3. Explain different states of threads in detail.
4. Explain the two methods of thread creation. Explain with examples.
5. Why are threads known as 'light weight' processes?
6. What is a runnable interface?
7. Why do we need synchronization between threads? What features does java provide for programmers to achieve thread synchronization? Explain how the acquisition and release of lock over shared objects is done atomically by JVM with the help of an example.
8. Explain thread priorities. What is the scheduling algorithm used by JVM to schedule different priority threads?
9. How can we pass messages between threads? Explain the functions wait(), sleep(), notify(), notifyAll().

## **D. Java Applets**

1. Define a java applet. Enumerate the chief features of java applets
2. What are the five methods that need to be programmed for creating an applet? Which events cause these methods to be invoked?
3. Describe the life cycle of an applet.
4. Explain the HTML tags CODE, CODEBASE, ALT, PARAM, VALUE.
5. Enumerate Applet capabilities and restrictions.