Assignment 3

1. What do you mean by inheritance?what is the importance of inheritance in OOP? Discuss about base class and derived class.Discuss about availability and visibility.
2. What do you mean by access specifier? Discuss about private, protected and public access specifier in case of inheritance. Write a syntax for each one of them and write a program to support your explanation.
3. What do you mean by overriding member function? Differentiate between Method overloading), Method overriding and Method Hiding with suitable example.
4. Explain various ways of overriding member function. What do you mean by containership? Expalin how operator overloading can be extended in derived class.
5. What is ambiguity and function overriding? How can be they resolved? Explain with suitable example.
6. WAP to illustrate the following inheritance.

   a).Single inheritance b). Multilevel inheritance c).Multiple inheritance. d).Hierarchical inheritance. e).Hybrid inheritance.

7. Write a program to show constructor invocation in single, multiple and multilevel inheritance.
8. Explain the need of virtual base class with suitable example.
9. Create a class **Person**,create two derived class **Employee** and **Student**, inherited from class **Person**.Now create a class **Manager** which is derived from two base classes **Employee** and **Student**. Show the use of virtual class, virtual function and virtual destructor.
10. Why do we inherit public and protected access specifier. Define a class name **Course** .Derive three classes from this class named: **Mathematics**, **Science** and **Engineering**.Then derive two classes from Science named: **Physics** and **Chemistry**. Define data members and member functions as appropriate. Illustrate the concept of member function overriding and accessing overridden member from the derived class in your program.
11. WAP with three classes student, test and result by using multilevel inheritance. Assume necessary data members and functions yourself and program with input information, input data and calculate marks total and display result.
12. Explain compile –time and runtime binding. What is the need of runtime binding? Differentiate abstract and concrete class. Write an abstract class of your choice and use it in program. Your program should be meaningful.
13. What do you mean by virtual function? Why is it important? Give suitable example.
14. What is pure virtual function and abstract class? Explain the need of pure virtual function. With suitable example explain runtime polymorphism.
15. What do you mean by RTTI? Explain how dynamic cast and typeid operators are used to achieve RTTI.
16. Does constructor get inherited? Why constructor cannot be virtual but destructor can be virtual? Explain about up cast and down cast with suitable example.
17. How does virtual function get inherited? Why we declare virtual function in public section. Explain.
18. A base class pointer contains address of its derived class object and if base class pointer goes out of scope which destructor is called? Explain with illustration.(polymorphism).
19. Write a program to create shape with functions area of shapes and display name of the shape and other essential component of the class. Create derived classes circle, rectangle, triangle and trapezoid each having overridden functions area and display. Write a program to illustrate virtual functions, pure virtual functions, abstract class and pointers to base class.
20. Explain about reinterpret_cast operator with suitable example. Explain about working mechanism of virtual function with the help of *_vptr, Vtable, pointer to object showing method hiding, method overloading and method hiding.