CS3391 OBJECT ORIENTED PROGRAMMING

Question Bank

UNIT II INHERITANCE AND INTERFACES

PART – A

1. What is meant by inheritance?

Inheritance is the process by which new classes called derived classes are created from existing classes called base classes.

2. What are the advantages of inheritance?

- Reusability of code
- Effort and time saving
- Increased reliability

3. How many classes can be extended by a class? Write the syntax

A class can extend only one class.

```
Class derived _class _name extends base _class _name
  {     // implementation code and overriding code     }
```

4. List the types of inheritance.

1. Single inheritance.
2. Multiple inheritance.
3. Multilevel inheritance.
4. Hybrid inheritance.
5. Hierarchical inheritance.

5. What are final classes?

A class that is declared with final keyword is known as final class. A final class cannot be sub classed. This is done for reasons of security and efficiency. Accordingly, many of the java standard library classes are final, for example java. lang. System and java. lang. String. All methods in a final class are implicitly final.

6. Why are the final methods used?

These are used to prevent a method from overriding by the subclasses.

7. What is the use of final fields?

A final variable can only be assigned once. This assignment does not grant the variable immutable status. If the variable is a field of a class, it must be assigned in the constructor of its class. The values of a final variable is not necessarily known at compile time, but value of constant is known at compile time.

8. What is a abstract class?

An abstract class that cannot be instantiated. (i.e.) objects are not created for an abstract class. It can only be used as a super class for other classes that extend the abstract class.

9. Write the general form of an interface.

```
[modifiers] interface Interface Name
{
    // declaring methods
   [public abstract] return type method name1(arguments);
     // defining constants
    [public static final]
     type property name = value;
}
```

10. What inheritance can be only achieved through interfaces?

Through interfaces multiple inheritances can be achieved.

11. What are the methods available in object class?

- clone()
- equals()
- copy(Object src)
- finalize()
- get class()
- hash code()
- notify()
- notify All()
- to string()
- wait()

12. What is the use and the syntax of equals() method of object class?

It is used to check whether two objects are equal or not

public Boolean equals(object other object)

13. What is meant by object cloning?

Object cloning is the process of creating identical copy of an object. An identical copy of an object is created by invoking clone() on that object.

14. What are the different types of cloning?

•deep cloning

•Shallow cloning

15. What will be the results when we invoke the clone() method?

Return an object reference to a copy of the object upon which it is invoked, or throw clone not supported exception.

16. What are inner classes?

An inner class is a class declared entirely within t6he body of another class or interface. It is distinguished from a subclass.

17. List the types of inner classes.
    - Member class
    - Local class
    - Anonymous class

18. What are the rules to be followed while using inner class?
    - Inner classes cannot have static members, Only static final variables.
    - Interfaces are never inner.
    - Static classes are not inner classes.
    - Inner classes may inherit static members that are not compile-time constants even though they may not declare them.

19. What is the use of + operator on the strings?

The + sign can be used to concatenate(join) two strings. During the concatenate non-string operands are converted into string type.

Example: Sting s="Bala"+"Krishnan";

20. How will you compare two strings?

Strings are compared by using 3 methods. equals( ), equals ignore case( )and compare to( ).

Example

```
str1.equals(str2);// if str1 and str2 are equal returns true, otherwise false
str1 compare to(str2); // str1=str2 -0, str1>str2-positive, str1<str2-negative
```

21. How are the strings immutable in java? How can we overcome it?

There is no method in string class to change a character in a string. To do this concatenation and substring operations are combined.

Example: String s=new String("Sunilkumar"); S="A"+s. substring(1,4);

22. List the string methods in java.
    - toLowerCase; Converts the string sl. to all lowercase
    - toUpperCase; Converts the .string sl to all Uppercase
    - replace ('x' , 'y') ; Replace all appearances of x with y
    - trim () ; Remove white spaces at the beginning and end of the string sl
    - equals (s2) Returns 'true'if sl is equal to s2
    - equalsIgnoreCase(s2) Returns 'true'if sl = s2, ignoring the case of characters
    - length () Gives the length of sl
    - ChartAt(n) Gives nth character of sl
    - compareTo(s2) Returns negative if sl < s2, positive if sl > s2, and
    - zero if sl is equal s2
    - concat(s2) Concatenates sl and s2
    - substring (n) Gives substring starting from nth character
    - substring(n, m) Gives substring starting from nth character up to mth
    - (not including mth)
    - indexOf('x') Gives the position of the first occurrence of 'x' in the string sl
    - indexOf ('x' , n) Gives the position of 'x' that occurs after nth position In the string sl
    - append(s1)
    - delete()

- replace()

23. When will you use interface?
    In order to implement multiple inheritances, interface will be used as one base class with keyword implements.

24. What is the use of final method in Java?
    In order to provide security final method cannot be override in subclasses

25. What is abstract method?
    Abstract method is method, it should redefine in the subclasses.

PART- B

1. Explain inheritance with example.
2. Write briefly on abstract classes with example.
3. Explain with example the use of interface.
4. Explain the concept of multiple inheritances with suitable examples.
5. What is meant by object cloning? Explain it with an example.
6. Discuss in detail about inner class, with it usefulness.
7. Explain the concepts of multilevel inheritance.
8. Develop a message abstract class which contains play message abstract method. Write a different sub-class like text message, voice message and fax message classes for to implementing the play massage method.
9. Develop a abstract reservation class which contains play message abstract method. Implement the sub-classes like reserve train and reserve bus classes and implement the same.
10. Develop an Interest interface which contains simple interest and comp interest methods and static final field of rate 25%. Write a class to implement those methods.