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2nd Sessional Test
4th Semester, Comp. Engg.

Subject - Object Oriented Programming using Java

Section - A

Ans - 1

ii) Access Modifiers -
It helps with the visibility of a variable or method. It is of four types -
a) Public
b) Package
c) Protected
d) Private

a) Public - In public, the variable or method can be used by any different class their child class, everyone.

b) In Package - the variable or method can be used in package only. Classes that are not in package cannot use it.

c) Protected - By protected, now the variable or method can be used by only child classes of that class even they are in another package but child class only.

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d) Private - By applying private, no one can use its variable or method of someone's class even his child class can't access it's ~~con~~ variable or method.

iii) Main advantages of inheritance -

- Widely used to solve real world problems.
- Inheritance is of many types that's why its applications are many.
- Inheritance depicts a child-parent relationship between objects.
- Code reusability is there in inheritance.
- Child class inherits all the properties and behaviour of parent class using inheritance.
- It reduces time for coder to retype the code again for any child class.

iv) Constructor Chaining -

Constructor chaining happens when constructor of superclass is called and some new properties are added into it overtime. This makes a chain of constructors as the ~~the~~ objects made by some derived constructor refers to its parent class constructor. That's how the concept of constructor chaining works.

v) Explain the keywords -

i) this

→ this keyword is used when we are calling method of same class i.e. where the method is made is the same class in which we are calling it.

ii) super

→ super keyword is used when we have to call the method of parent class from a child class.

i) Java constructor -

Constructors are used in Java to create objects in a class. Java constructor can be used to make class related objects with ease.

Java method -

Method in java is the behaviour of class objects. As in the real world all objects (e.g. person) has some properties and some behaviour. So, the behaviour for objects in Java is defined as method.

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Section - B

Ans-3 **Inheritance -**

Inheritance is a concept by which child classes inherits the variables and methods of their superclass / parent class. This concept is highly used to solve many real-world problems using Java.

- Inheritance is of five types :-

a) **Single Inheritance :-**

keyword extends specifies that the properties of the superclassname are extended to the subclassname.

(Parent class → child class).

→ In this type of inheritance, there is only one parent and child class in it.

b) **Multi - level inheritance :**

In this types of inheritance, parent class has a child class and that child has its child class and this can be extended as per the needs i.e. when there are child class of child class then it is known as multi-level inheritance.

e.g.

```
Class A
{ - - -
  - - - .
}
Class B extends Class A
{ - - - -
  - - - -
}
Class C extends Class B.
{ - - - -
  - - - -
}
```

c) Multiple Inheritance -

This concept can't be applied directly in java ; for this interface concept is used.

In this type of inheritance, there are two or more parent class have a same child class which means the child class have all properties of its all parent classes.

d) Hierarchical Inheritance -

In this type of inheritance, there is a child - parent or father - son relationship in a hierarchical manner. It means all the properties and behaviour of upper class are inherited to lower class. By using this concept,

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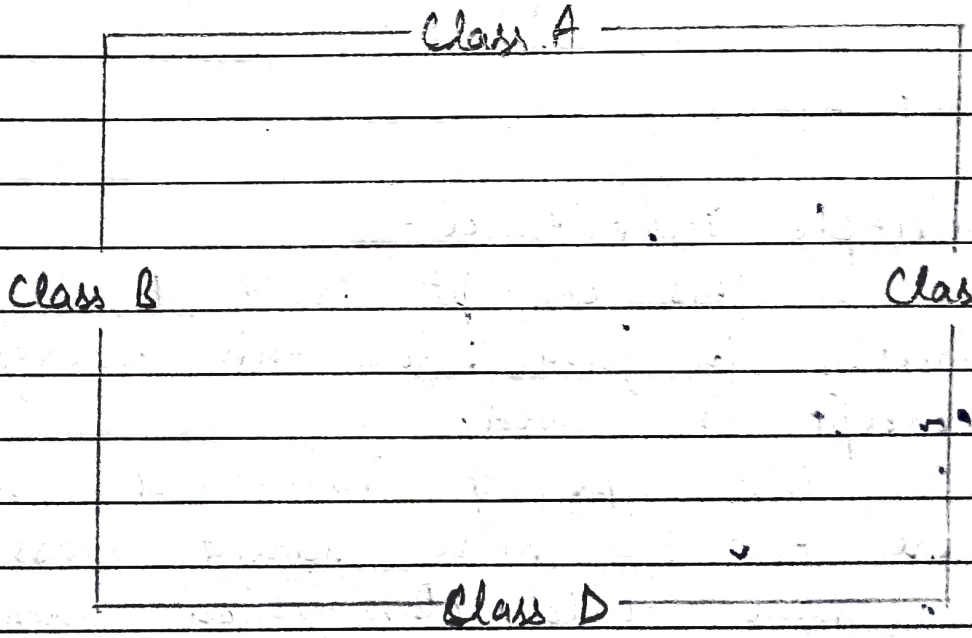
many real life problems can be solved.

e) Hybrid Inheritance -

This is not any other inheritance itself but it is a combination of all other inheritance like single, multi-level, hieranchical inheritance.
Hybrid Inheritance can be complex but is very useful for some hard problems.



Hybrid Inheritance.