1a) A Programming language is a formal language comprising a set of strings that produce various kinds of machine code output. Programming languages are one kind of computer language and are used in computer programming to implement algorithms. most programming language consist of instructions for computers.

b) Object oriented programming (OOP) is the idea that a program can be broken up into "objects" and these objects have their own attributes and methodes which define them.

c) There are 10 application of oops.
i) client-server system, ii) object oriented Databases, iii) object oriented Databases, iv) Real time system Design, v) simulation and modeling system, vi) Hypertext and Hypermedia, vii) Neural Networking and parallel programming, viii) office automation system, ix) CIM/CAD/CAM systems, x) AI EXPERT systems.

d) OOP offers several benefits to the program designer and the user. Object-orientation contributes to the solutions of many problem associated with the development and quality

of software products. The new technology promises greater programmer productivity, better quality of software and lesser maintenance cost.

2a)
```
Class Example
{
Public State( void main (String args[])
{
int, a=5, b=6, c;
  c= a+b;
System.out.println ("Add of a&b is" +c);
}
}
```

b)
```
Class Rectangle
{
Public Static void main (String args[])
{
int l=5;
int b=6;
 area;
area = l*b;
```

System.out.println("Area of Rectangle is"+area);

}

}

3a) Object oriented programming (OOP) is the idea that a program can be broken up into "objects" and these objects have their own attributes and methodes which define them.

Easy to use

The fundamental of Java came from a programming language called C++. Although C++ is a powerful language, it was felt to be too complex in its syntax, and inadequate for all of Java's requirements.

Reliability

Java needed to reduce the likelihood of fatal errors from programmer mistakes with this in mind, object-oriented program was introduced.

Secure

Java doesn't use memory pointers explicitly. All the programs in Java are run under an area known as the Sand box.

Robust

Java has the strong memory allocation and automatic garbage collection mechanism. It provides the powerful exception handling and type checking mechanism as compare to other programming languages.

Platform Independent

Programs needed to work regardless of the machine they were being executed on.

Performance

Java uses native code usage, and lightweight process called threads. In the beginning interpretation of bytecode resulted the performance slow but the advance version of JVM.

Multithreaded

multithreading means a single program having different threads executing concurrently independently at the same time.

Interpreted

Code is compiled to bytecodes that are interpreated by a Java virtual machines (JVM). This provides portability to any machine for which a virtual machine has been written.

c) i) Java is a programming language orginally developed by James Gosling at Sun microsystem (which is now a subsidiary of oracle corporation) and released in 1995 as a core component of Sun microsystem's Java platform.

ii) The language derives much of its syntax from C and C++ but has a simpler object model and fewer low-level facilities.

iii) Java applications are typically compiled to bytecode (class file) that can run on any Java virtual machine (JVM) regardless of computer architecture.

iv) Java is a general-purpose, concurrent, class-based, object oriented language that is specially designed to have as few implemention dependencies as possible.

b) i) A Java virtual machine (JVM) is a virtual machine capable of executing Java bytecode. Sun Microsystems stated that there are over 4.5 billion JVM-enabled devices.

ii) A Java virtual machine is software that is implemented on one-virtual hardware and on standard operating System.

iii) JVM are available for many hardware and software platforms.

iv) Java byte code is intermediate language which is typically compiled from Java, but it can also be compiled from other programming languages.

v) Oracle, the owner of Java, produces a JVM, but JVMs using the "Java" trademark may be developed by other companies as long as they adhere to the JVM specification published by oracle and to related contractual obligations.

vi) The oracle JVM is written in the C programming language.