Ans 5. a) The objective of the piece of code:

"For a given array of integers and a given integer *inp*, write the Java program that counts and displays the largest number of *inp*'s that appear together."

b) One finds that this program doesn't update the variable curMax if the last element of the given array is *inp,* and the largest number of *inp*'s that occur together is present in the end of the given array.

One way to fix it :

return (curCount > curMax) ? curCount : curMax;

Note: 1 marks to identify the logical error and 1.5 marks to replace it with the correct expression

Ans 6. Coupling: defines the level of inter-dependability among modules of a program. The lower the coupling, the better the program.

- Content coupling - When module can directly access the content of another module
- Common coupling- When modules have read and write access to some global data
- Control coupling- if one module decides the function of the other module
- Stamp coupling- When multiple modules share common data structure
- Data coupling- Modules interact with each other by means of passing data (as parameter)

Ideally, no coupling is considered to be the best.

Note: ½ marks for defining the coupling and 2.5 marks for the explanation of 5 types of coupling

Ans 7. Method overloading: When two or more methods in one class have the same method name but different parameters.

Method overriding: When two methods have the same name as well as parameters. Usually one method is in the parent class and other is in the child class in order to provide specific implementation.

b) Following are the differences:

Method Overloading	Method Overriding

1)	Function signature is different	Function signature is same
2)	Is an example of compile-time concept	Is an example of run-time concept/polymorphism
3)	Used to increase the readability of program example: + operator in java used to concatenate two strings	used *to provide the specific implementation* of the method that is already provided by its super class. Example: toString() method Defined in object Class can be overridden by child classes.

More Examples of method overriding and overloading:

Method overloading: One can define various Time constructors as:

Time t1 = new Time();
Time t2= new Time(int hr, int min);
Time t2= new Time(int hr, int min, int sec);

Method overriding: Define a class shape and declare methods such as area and volume: double area(){ } and double volume(){}.

These methods may be overridden in the child classes circle, cylinder, rectangle, cube etc.

Note: 1.5 marks for 3 or more differences and 1.5 marks for the correct examples.