DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
FIRST SESSIONAL
SUBJECT: (IT 510) CORE JAVA TECHNOLOGY

Examination	**: B.TECH - Semester - V**	**Seat No.**	**:**
Date	**: 04/08/2016**	**Day**	**: Thursday**
Time	**: 11:30 am to 12:45 pm**	**Max. Marks**	**: 36**

INSTRUCTIONS:

1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Q.1 Do as directed.

(a) State True/False with justification. **[6]**

1. "*int true;*" is a valid java statement.
2. In Java, default constructor in no longer used if we define our own constructor.
3. final modifier cannot be applied to all the three java entities i.e. class, method and data.
4. In Java, Maximum value of char data type is '\u0000'.
5. *"public void static main(String args[])"* is an invalid main method signature.
6. Protected methods are not final.

(b) What are the advantages of a JIT compiler? **[2]**

(c) Explain method overloading with an appropriate java program. **[2]**

(d) Explain the following characteristics of java: **[2]**

i. Portable ii. Robust

Q.2 Attempt ***ANY TWO*** from the following.

(a) i. Explain the internal architecture of JVM in detail. **[3]**

ii. Explain java garbage collection mechanism with an appropriate java program. **[3]**

(b) Write a program which shows an implementation of package. Also discuss the directory structure of the package and the class path variable. **[6]**

(c) What will be the output of following programs? Explain your answer in detail. **[6]**

i.
```
class Base {
   public void display() { System.out.println("Base"); }
}

class Derived extends Base {
   private void display() { System.out.println("Derived"); }
}

public class Main {
   public static void main(String args[]) {
      Base b = new Derived();
      b.display();
   }
}
```

ii.
```
class Base {
  public static void display() {
    System.out.println("Base::display() called");
  }
}

class Derived extends Base {
  public static void display() {
    System.out.println("Derived::display() called");
  }
}

class Main {
  public static void main(String[] args) {
     Base b = new Derived();
     b.display();
  }
}
```

Q.3 Explain following questions.

(a) Explain interface and abstract classes in detail with appropriate java programs. Also explain when you should use among these two. **[6]**

(b) Create a class which performs the below mentioned operations on user-entered string values: **[6]**

i. To remove a character from a particular position from the string.
ii. To reverse the string
iii. To compare performance of string concatenation between String and StringBuffer classes.

OR

Q.3 Explain following questions.

(a) Explain is-a and has-a relationships in detail with appropriate java programs. Also explain when you should use among these two. **[6]**

(b) Create one method which takes upper bound and lower bound values as an argument and creates an array that contains all the integers between those two boundaries (inclusive). Create a class which shows the above relation and prints the user-entered range values. (i.e. If user enters input: Lower Bound=1, Upper Bound=10, then output will be: The array: [1 2 3 4 5 6 7 8 9 10]) **[6]**