(iv) The full form of AWT is
(a) Applet Window Toolkit (b) Abstract Window Toolkit
(c) Absolute Window Toolkit (d) Artistic Window Toolkit.

(v) Method Overriding is an example of
(a) static binding (b) dynamic binding
(c) both (a) & (b) (d) none of these.

(vi) If a="abcd" and we call Integer.parseInt(a), then which of the following will occur?
(a) IllegalArgumentException will be thrown
(b) ArithmeticException will be thrown
(c) NumberFormatException will be thrown
(d) Compilation Error.

(vii) Which is the default package of Java?
(a) java.lang (b) java.io
(c) java.util (d) java.system

(viii) Which of the following is FALSE about abstract classes in Java
(a) If we derive an abstract class and do not implement all the abstract methods, then the derived class should also be marked as abstract using 'abstract' keyword
(b) Abstract classes can have constructors
(c) A class can be made abstract without any abstract method
(d) A class can inherit from multiple abstract classes.

(ix) Which of the following is/are true about constructors in Java?
1) Constructor name should be same as class name.
2) If you don't define a constructor for a class, a default parameterless constructor is automatically created by the compiler.
3) The default constructor calls super() and initializes all instance variables to default value like 0, null.
4) If we want to parent class constructor, it must be called in first line of constructor.
(a) 1 (b) 1, 2 (c) 1, 2 and 3 (d) 1, 2, 3 and 4.

(x) *What is NullPointerException*?
(a) A NullPointerException is thrown when calling the instance method of a null object or modifying/accessing field of a null object.
(b) A NullPointerException is thrown when object is set as null.


```
        A a=new A();
        try{
            a.print(ar);
        }
        catch(ArithmeticException e){
            System.out.println("Division by zero");
        }
        finally{
            System.out.println("Finally from Main");
        }
    System.out.println("Last statement");
    }
}
```

1 + 3 + 3 + 5×1 = 12

7. (a) Differentiate between 'Final',' Finalize' and 'Finally'. What is wrapper class?

(b) Write a program in Java to implement dynamic stack. Program will take input from keyboard. If the stack is full it will double its size.

(4+2) + 6 = 12

Group - E

8. (a) What is thread? Explain thread creation method(s).

(b) Draw and explain thread lifecycle.

(c) What is the difference between sleeping, blocked and waiting states involved in a thread lifecycle?

(2+3) + 3 + 4 = 12

9. (a) Draw and explain Applet lifecycle.

(b) What are the basic differences between Applet and Application program?

(c) What are the packages to be imported in an applet program and why those are required?

(d) State the significance of repaint() method in applet programming.

3 + 3 + 4 + 2 = 12

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2016

OBJECT ORIENTED PROGRAMMING AND UML
(INFO 2204)

Time Allotted : 3 hrs **Full Marks : 70**

Figures out of the right margin indicate full marks.

Candidates are required to answer Group A and any 5 (five) from Group B to E, taking at least one from each group.

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following: **10 × 1 = 10**

(i) Finally block executes for
(a) every caught exception
(b) every uncaught exception
(c) both caught and uncaught exception
(d) none of these

(ii)
```
class t{
public static void main(String args[]){
int j;
for (int i=0;i<14;i++){
 if(i<10)
  j=2+i;
   System.out.println("j:"+j+"i:"+i);
}
}
}
```
What is wrong with above code?
(a) i is not declared properly (b) Nothing
(c) j is not initialised properly (d) for loop is wrong.

(iii) What is the maximum value of **shortest** integer in JAVA?
(a) 127 (b) 255 (c) 64 (d) 2,147,483,647.

(c) A NullPointerException is thrown when object property is set as null.
(d) None of the above.

Group - B

2. (a) "Java is a platform independant language" - Justify this statement.

   (b) How the concept of Abstraction, Specialization and Encapsulation is implemented in Java. Explain your answer with example.

   (c) Explain the significance of each keyword in "public static void main (String args[])"

3 + 2 × 3 + 3 = 12

3. (a) What is Aggregation and Association in Object Oriented Programming?

   (b) What are the different type of polymorphism possible in Java? Explain with example.

   (c) What is the significance of Java garbage collector and how it is implemented in java?

4 + 4 + 4 = 12

Group - C

4. (a) What is Byte code? How it helps to make Java Architectural Neutral language?

   (b) What is dynamic method dispatch in Java? Explain briefly. How it is related to Polymorphism- Explain. Differentiate between method overloading and method overriding.

(2+2) + (2.5+2.5+3) = 12

5. (a) Clearly state the difference between abstract class and interface with example.

   (b) How does one increase the capacity of a StringBuffer instance which has been already created earlier? Will the methods length() and capacity() returns same value while called for StringBuffer instance?

   (c) Comment on the following statement –
   "It is better to import only particular classes from the package which are required by the program rather than importing all the classes present in it."

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(c) A NullPointerException is thrown when object property is set as null.
(d) None of the above.

Group - B

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(d) Does importing a package imports the sub packages as well? Explain your answer with example.

(e) Can we import the same package twice?

(f) What will happen if an imported class has same name with a class declared in the current program?

3 + 3 + 2 + 2 + 1 + 1 = 12

Group - D

6. (a) What is 'Throwable'?

(b) Differentiate between 'throw' and 'throws' in Java. Explain your answer with example.

(c) Write a Java program which demonstrates a user defined exception class.

(d) What will be the output of the following code if executed with the following set of command line arguments:
(i) 2 0
(ii) 3
(iii) 4 abcd
(iv) 1 5
(v) no argument

```
class A{
void print(String a[])        {
                try{
                double result=Integer.parseInt(a[0])/Integer.parseInt(a[1]);
                        System.out.println(result);
                }
                catch(ArrayIndexOutOfBoundsException e){
                        System.out.println("Array Index Problem");
                }
                finally{
                        System.out.println("Finally");
                }
                System.out.println("End of function");
    }
}
class D{
                public static void main(String ar[]){
```


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(d) Does importing a package imports the sub packages as well? Explain your answer with example.

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