

**OBJECT ORIENTED PROGRAMMING
(CSBS 3202)**

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 alternative for the following: **10 × 1 = 10**

- (i) JRE stands for _____.
(a) Java Runtime Ecosystem (b) JDK Runtime Environment
(c) Java Runtime Environment (d) None of (a), (b) & (c).
- (ii) Choose the wrong Java code statement below.
(a) boolean a = false (b) boolean a = (5>6)|| (4>3)
(c) boolean a = 1 (d) boolean a = 4>3?true:false
- (iii) What is the entry point of a program in Java?
(a) main() method (b) The first line of code
(c) main class (d) None of (a), (b) & (c).
- (iv) Which option is false about the *final* keyword?
(a) A *final* method cannot be overridden in its subclasses
(b) A *final* class cannot be extended
(c) A *final* class cannot extend other classes
(d) A *final* method can be inherited
- (v) Which component is responsible to optimise byte code to machine code?
(a) JVM (b) JRE (c) JIT (d) JDK.
- (vi) When does method overloading is determined?
(a) At run time (b) At coding time
(c) At compile time (d) At execution time
- (vii) What is the output of the below Java program?
public class Example
{
}
public class Testing1
{
public static void main(String[] args)

```
{  
    System.out.println("Hello Boss!");  
}  
}
```

- (a) Hello Boss! (b) No Output
(c) Compiler error (d) None of (a), (b) & (c).

(viii) Which of these is correct way of calling a constructor having no parameters, of superclass A by subclass B?

- (a) super(void); (b) superclass.();
(c) super.A(); (d) super();

(ix) Which of the following exception is thrown when divided by zero statement is executed?

- (a) InfiniteNumberException (b) NumberFormatException
(c) ArithmeticException (d) DividedByZeroException

(x) How many objects will be created in the following?

```
String a = new String("Heritage");  
String b = new String("Heritage");  
String c = "Heritage";  
String d = "Heritage";
```

- (a) 2 (b) 3 (c) 4 (d) none.

Group- B

2. (i) Why the main() method in java is public? Can we make it default?
(ii) Why the main() method is static in java?
(iii) In public static void main(String args[]), if we make the return type int instead of void, what will happen and why?
(iv) In public static void main(String args[]), if we write static public void main(String args[]), what will happen and why?
(v) Can we execute a java program without main method?

```
(vi) class sample {  
    public static void main(String[] args)  
    {  
        for(int i = 0; i < args.length; i++) {  
            System.out.println(args[i]);  
        }  
    }  
}
```

If you run the java program above with arguments like the following: java sample one two three

What will be the output and why?

[[CO1](Analyze/IOCQ)]
(6 × 2) = 12

3. (a) Write a java program to accept a string from the user and find out the following:
(i) Count the uppercase characters, (ii) Count the lowercase characters and
(iii) Count the digits. [[CO1](Apply/IOCQ)]
- (b) Given that Student is a class, how many reference variables and objects are created by the following code?
Explain.
Student studentName, studentId;
studentName = new Student();
Student stud_class = new Student(); [[CO1](Apply/IOCQ)]
- (c) Write a program that takes a String from the user on the command-line and print it in reverse. "This is a test" must be printed as: "test a is This".
[[CO4](Apply/IOCQ)]
6 + 2 + 4 = 12

Group - C

4. (a) Write down the differences between Method Overloading & Method Overriding in java. [[CO3](Remember/LOCQ)]
- (b) What will be the output? Explain.
import java.io.*;
class Test {
 public static void main(String[] args)
 {
 String s1 = "java";
 s1.concat(" rules");
 System.out.println("s1 refers to " + s1); }
}
- (c) What is the role of String Constant Pool in java? Why the String class is marked final in java? [[CO3](Evaluate/HOCQ)]
[[CO3](Analyze/IOCQ)]
6 + 3 + 3 = 12
5. (a) Write a complete code along with the output to show how multiple inheritance is implemented in Java. [[CO5](Evaluate/HOCQ)]
- (b) Find out the error(s) in the code below. Suggest all possible corrections.
public class A
{ public A(int i)
 {
 }
}
class B extends A
{
 }
}
- (c) Explain the use of 'super' keyword in java. [[CO5](Analyze/IOCQ)]
[[CO3](Understand/LOCQ)]
4 + 6 + 2 = 12

Group - D

6. (a) Distinguish between FileInputStream and FileReader. What is wrapper class? Explain with example. [[CO5](Understand/LOCQ)]
 (b) What is the use of BufferedReader? State the differences between String and Stream in Java. Explain the statement Integer.parseInt. [[CO5](Understand/LOCQ)]
(3 + 3) + (2 + 2 + 2) = 12
7. (a) Discuss the differences between throw and throws in java. [[CO5](Apply/IOCQ)]
 (b) Create a user defined exception named CheckIllegalAgeException to check whether a voter can vote or not based on the age of the voter. The user will be asked to provide the age of the voter, if the age of the voter is less than 18, throw the CheckIllegalAgeException, else print the appropriate message to the voter. Write a java program that uses this exception. [[CO5](Create/HOCQ)]
6 + 6 = 12

Group - E

8. (a) What are the two different ways we can create threads in java? Write a multithreaded program in java that continuously prints the strings "ping" and "PONG" in the console at intervals of one second. Use two threads one for "ping" and another for "PONG". [[CO6](Create/HOCQ)]
 (b) Write down the basic differences between multitasking and multithreading? [[CO6](Remember/LOCQ)]
(2 + 6) + 4 = 12
9. (a) Draw and describe Applet Life cycle. Can init() method be called more than once? Justify your answer. [[CO6](Remember/LOCQ)]
 (b) Write an applet program which will take two numbers in text box and will display the summation result in third text box. [[CO6](Create/HOCQ)]
(4 + 2) + 6 = 12

<i>Cognition Level</i>	<i>LOCQ</i>	<i>IOCQ</i>	<i>HOCQ</i>
<i>Percentage distribution</i>	31.25	40.63	28.12

Course Outcome (CO):

After the completion of the course students will be able to

1. Recall the knowledge of procedural language and map it to paradigm of object oriented concept.
2. Relate the real world problem with object oriented approach.
3. Describe and illustrate the features of object-oriented programming.
4. Analyze any real world problem with object oriented approach and formulate a solution for the same.
5. Manage the complexity of procedural language by using the concept polymorphism, inheritance, abstraction, encapsulation.
6. Create and explain some GUI and thread-based applications.

*LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question; HOCQ: Higher Order Cognitive Question.