

**OBJECT ORIENTED PROGRAMMING
(CSBS 3202)**

Time Allotted : 2½ hrs

Full Marks : 60

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 4 (four) from Group B to E, taking one from each group.*

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

Group – A

1. Answer any twelve:

12 × 1 = 12

Choose the correct alternative for the following

- (i) One of the major elements of object-oriented programming language is
 - (a) Persistence
 - (b) Encapsulation
 - (c) Concurrency
 - (d) Error handling
- (ii) Access each element of an array using through
 - (a) Index
 - (b) Element
 - (c) Data
 - (d) Character
- (iii) A technique that allows a class to inherit properties and methods from another class
 - (a) Aggregation
 - (b) Polymorphism
 - (c) Inheritance
 - (d) Association
- (iv) Which method can be accessed without using objects?
 - (a) static
 - (b) dynamic
 - (c) default
 - (d) constructor
- (v) Which of these keywords can be used to prevent inheritance of a class?
 - (a) super
 - (b) constant
 - (c) class
 - (d) final
- (vi) Which relationship is a special form of association where a part-whole relationship exists between objects in Java?
 - (a) Aggregation
 - (b) Association
 - (c) Composition
 - (d) Inheritance
- (vii) Which class in Java wraps object or contains primitive data types
 - (a) Scanner class
 - (b) Abstract class
 - (c) String class
 - (d) Wrapper class
- (viii) Which of the following exceptions is thrown when divided by zero statement is executed?
 - (a) Infinite Number Exception
 - (b) Number Format Exception
 - (c) Arithmetic Exception
 - (d) None of these

- (ix) Which interface is used to create a thread in Java?
 (a) Processor (b) Executor
 (c) Threadable (d) Runnable
- (x) What is a deadlock in multithreading?
 (a) A situation where a thread runs indefinitely without blocking
 (b) A situation where all threads complete successfully
 (c) A situation where a thread is terminated forcibly
 (d) A situation where two or more threads are unable to proceed because they are each waiting for the other to release a resource

Fill in the blanks with the correct word

- (xi) In Java, the _____ loop checks the condition after executing the loop body.
- (xii) The thread will be in a waiting state when it calls _____ method.
- (xiii) _____ identifies which objects are still in use (referenced) and which are not in use (unreferenced) to free up the memory.
- (xiv) If three threads try to share a single object at the same time, _____ condition will arise in this scenario.
- (xv) _____ method is used to begin execution of the thread.

Group - B

2. (a) Explain the relationship between composition, aggregation and association with examples. [[C02](Analyse/IOCQ)]
 (b) "JAVA's platform independence is achieved through BYTE Code" — Justify the statement. [[C01](Evaluate/HOCQ)]
 (c) Write a Java program to accept the marks of 5 subjects of a student from the keyboard. Print total marks and percentage of marks. Assume that the maximum mark in any subject is 100. [[C03](Evaluate/IOCQ)]
4 + 2 + 6 = 12
3. (a) What are the features of object-oriented programming? [[C01](Remember/LOCQ)]
 (b) Write a Java program to find out the following from a given string
 (i) Replace the first three characters by "HIT"
 (ii) Print it in reverse
 (iii) Delete first four characters. [[C02](Evaluate/HOCQ)]
 (c) Why is the String class called immutable? Give two examples of mutable classes in Java. [[C02](Understand/IOCQ)]
3 + 6 + (1 + 2) = 12

Group - C

4. (a) In Java, what are the key differences between public, protected, and default (no specifier) access specifiers? [[C01](Understand/IOCQ)]

- (b) What is nested and inner class in Java? Explain the purpose of a constructor in Java. Is it possible for a constructor to be private in Java? Support your explanation with an example. [[CO2](Analyse/IOCQ)]
6 + 6 = 12
5. (a) What do you understand about Run-time Polymorphism in java? Explain with the help of Java Code. Why Run Time Polymorphism is called “dynamic binding”? [[CO4](Analyse/IOCQ)]
- (b) What are the uses of super and final keywords in Java? Explain with the help of Java code. [[CO4](Understand/LOCQ)]
(2 + 2 + 2) + (2 + 4) = 12

Group – D

6. (a) What are the differences between exception and error? [[CO5](Remember/LOCQ)]
- (b) When an exception occurs in a java code, how JVM handles it internally, show step by step with the help of code. [[CO5] (Understand/LOCQ)]
- (c) In Java, how do you convert a string to an integer and vice versa? Explain with the help of code. [[CO2](Understand/LOCQ)]
4 + 6 + 2 = 12
7. (a) What are the differences between BufferedReader and Scanner classes in Java? [[CO5](Analyse/IOCQ)]
- (b) Explain different types of exception classes in Java with examples. [[CO5](Understand/IOCQ)]
- (c) Why do we use try and catch in Java? [[CO5](Understand/IOCQ)]
4 + 6 + 2 = 12

Group – E

8. (a) Describe briefly the thread priorities for multithreading in Java. [[CO6](Analyse/IOCQ)]
- (b) Describe the runnable state and blocked state in the thread life cycle? [[CO6](Apply/HOCQ)]
- (c) Explain why join() method is required for multithreading concepts in Java. [[CO6](Apply/HOCQ)]
4 + 4 + 4 = 12
9. (a) What is AWT(Abstract Window Toolkit) in Java? What are the advantages of Java Applet? [[CO6](Analyse/HOCQ)]
- (b) Describe the initializing stage and starting stage in the life cycle of Java applet. [[CO6](Analyse/HOCQ)]
(2 + 4) + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	21.88	48.96	29.16

