

**OBJECT ORIENTED PROGRAMMING
(CBS2204)**

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) A class inherits from a class, which itself inherits from another class is
 - (a) Hierarchical Inheritance
 - (b) Multiple Inheritance
 - (c) Multilevel Inheritance
 - (d) Single Inheritance
- (ii) It is a special method that is used to initialize objects and called automatically when an object of a class is created
 - (a) Main
 - (b) Constructor
 - (c) Finalize
 - (d) Run
- (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 keyword among the following can be used to declare an array of objects in java?
 - (a) allocate
 - (b) static
 - (c) this
 - (d) new
- (v) When does method overriding is determined?
 - (a) At run time
 - (b) At coding time
 - (c) At compile time
 - (d) At execution time
- (vi) Which of these keywords can be used to prevent inheritance of a class?
 - (a) super
 - (b) constant
 - (c) class
 - (d) final
- (vii) What is a mechanism to handle the runtime errors in Java?
 - (a) Exception handling
 - (b) Buffered reader
 - (c) Multithreading
 - (d) Garbage collection

- (viii) Which of the following is/are true about packages in Java?
- (1) Every class is part of some package.
 - (2) All classes in a file are part of the same package.
 - (3) If no package is specified, the classes in the file go into a special unnamed package.
 - (4) If no package is specified, a new package is created with the folder name of the class and the class is put in this package.
- (a) Only 1, 2 and 3 (b) Only 1, 2 and 4
(c) Only 4 (d) Only 1 and 3.
- (ix) Which interface is used to create a thread in Java?
- (a) Processor (b) Executor
(c) Threadable (d) Runnable
- (x) In Java, what is the purpose of the sleep() method in threads?
- (a) It terminates all threads in the program
(b) It pauses the execution of the current thread for a specified duration
(c) It resumes the execution of a thread
(d) None of These

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) The arguments passed from the command prompt/terminal and it is used as an input is called _____.
- (xiv) Define multiple methods with the same name but different parameters within the same class is called _____.
- (xv) If three threads try to share a single object at the same time, _____ condition will arise in this scenario.

Group - B

2.
 - (a) What are the advantages of object oriented programming over procedural programming? [[CO1](Understand/LOCQ)]
 - (b) Why is Java called platform independent? [[CO1](Understand/LOCQ)]
 - (c) Why should the main method be declared as public and static in Java? If we use default access specifiers instead of public for the main method, then what will happen? Support your answer with proper justification. [[CO2](Understand/IOCQ)]

4 + 2 + (2 + 4) = 12

3.
 - (a) Write a Java program to accept a string from the user and find out the following:
 - (i) Print first four characters
 - (ii) Replace the last three character by first three character. [[CO2](Apply/IOCQ)]
 - (b) Explain Association in Java. Discuss the relation with Composition and Aggregation. [[CO3](Understand/IOCQ)]
 - (c) Discuss the primary "buzzwords" of Java. [[CO2](Remember/LOCQ)]

(3 + 3) + 3 + 3 = 12

Group - C

4. (a) What will be the output? Explain.
class Test
{
 public static void main(String[] args)
 {
 String s1 = "java";
 s1.concat(" rules");
 System.out.println("s1 refers to " + s1);
 }
}
- [[CO4](Evaluate/IOCQ)]
- (b) What is Method Overloading in Java? What is the difference between Method Overloading and Overriding?
[[CO4](Understand/LOCQ)]
- (c) Can we overload main() in Java? Explain with examples.
[[CO5](Evaluate/HOCQ)]
3 + (2 + 4) + 3 = 12
5. (a) Why are static methods used in Java? Why is the main method in Java static?
[[CO3](Understand/LOCQ)]
- (b) What is the purpose of the “this” keyword in Java? Write a Java program that uses “this()” to invoke the current class constructor.
[[CO4](Apply/IOCQ)]
- (c) Can we overload static methods? Explain.
[[CO4](Evaluate/HOCQ)]
(2 + 2) + (2 + 4) + 2 = 12

Group - D

6. (a) What are the differences between checked exceptions and unchecked exceptions?
[[CO5](Remember/LOCQ)]
- (b) What is User-defined Exception Java? Discuss how to handle the User-defined Multiple Exceptions with example.
[[CO5](Analyse/IOCQ)]
- (c) In Java, how do you convert an integer to a string and vice versa? Explain with the help of code.
[[CO2](Understand/LOCQ)]
4 + (2 + 4) + 2 = 12
7. (a) What are the differences between exception and error?
[[CO5](Remember/LOCQ)]
- (b) What is the use of BufferedReader? State the differences between String and Stream in Java. Explain the statement Integer.parseInt.
[[CO5](Analyse/IOCQ)]
- (c) Explain autoboxing and unboxing of wrapper class in Java.
[[CO5](Understand/LOCQ)]
4 + (2 + 2 + 2) + 2 = 12

Group - E

8. (a) Which thread is sure to run in a Java program? Explain.
[[CO6](Analyse/IOCQ)]
- (b) Write a multithreaded program that continuously prints the strings “ping” and “PONG” in the console at random distances at intervals of one second. Use two threads one for “ping” and another for “PONG”.
[[CO6](Create/HOCQ)]

- (c) Write the importance of thread priority? How do we set priorities for threads?
[[CO6](Analyse/IOCQ)]
4 + 6 + 2 = 12
9. (a) Write the step-by-step of different states of the thread life cycle in Java using proper diagram.
[[CO6](Apply/IOCQ)]
- (b) What is multithreading concepts in Java? Write and explain the two ways to create threads in Java?
[[CO6](Apply/IOCQ)]
6 + (2 + 4) = 12
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Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	32.29	56.25	11.46