

**ENTERPRISE APPLICATION IN JAVA
(CSE3232)**

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) JVM stands for
 - (a) Java Virtual Machine
 - (b) Java Variable Method
 - (c) Java Verified Mode
 - (d) Java Vendor Machine
- (ii) Which keyword is used to create a class in Java?
 - (a) define
 - (b) class
 - (c) struct
 - (d) object
- (iii) Method overloading is an example of
 - (a) Compile-time polymorphism
 - (b) Run-time polymorphism
 - (c) Encapsulation
 - (d) Abstraction
- (iv) Which class is used for reading files byte by byte?
 - (a) FileReader
 - (b) FileInputStream
 - (c) BufferedReader
 - (d) Scanner
- (v) JDBC stands for
 - (a) Java Database Connectivity
 - (b) Java Data Base Connection
 - (c) Java Database Control
 - (d) Java Direct Base Connection
- (vi) JSON stands for
 - (a) Java Standard Object Notation
 - (b) JavaScript Object Notation
 - (c) Java Service Object Notation
 - (d) Java Structured Object Notation
- (vii) REST APIs commonly exchange data in
 - (a) JSON
 - (b) XML
 - (c) Both (a) and (b)
 - (d) HTML
- (viii) Lambda expressions are used for
 - (a) Database operations
 - (b) Functional programming
 - (c) File operations
 - (d) Network programming

- (ix) ND4J is used for
 (a) Numerical computing (b) Web development
 (c) File handling (d) Networking
- (x) AI microservices can be built using
 (a) JavaFX (b) Spring Boot
 (c) JDBC (d) Swing

Fill in the blanks with the correct word

- (xi) _____ is the process of wrapping data and methods together.
- (xii) _____ block handles exceptions.
- (xiii) _____ is used for database connectivity in Java.
- (xiv) Hibernate reduces the need for writing _____.
- (xv) _____ library is used for deep learning in Java.

Group - B

2. (a) Define the concepts of encapsulation, inheritance, polymorphism, and abstraction. [[CO1](REMEMBER/LOCQ)]
- (b) Write a Java program demonstrating inheritance using a base class Vehicle and a derived class Car. [[CO2](APPLY/IOCQ)]
- (c) Analyse how inheritance and polymorphism contribute to software reusability in object-oriented programming. [[CO3](ANALYSE/HOCQ)]
- 4 + 4 + 4 = 12**
3. (a) Explain the String class and StringBuffer class in Java. [[CO1](REMEMBER/LOCQ)]
- (b) Write a Java program to reverse a string entered by the user. [[CO2](APPLY/IOCQ)]
- (c) Analyse the differences between String, StringBuffer, and StringBuilder. [[CO3](ANALYSE/HOCQ)]
- 4 + 4 + 4 = 12**

Group - C

4. (a) Explain the concept of exception handling in Java and describe the role of try, catch, and finally blocks. [[CO1](REMEMBER/LOCQ)]
- (b) Write a Java program that handles division by zero using exception handling. [[CO2](APPLY/IOCQ)]
- (c) Define serialization and deserialization in Java. [[CO1](REMEMBER/LOCQ)]
- 4 + 4 + 4 = 12**
5. (a) Explain the JDBC architecture and its components. [[CO1](REMEMBER/LOCQ)]
- (b) Write a Java program to connect to a MySQL database using JDBC. [[CO2](APPLY/IOCQ)]
- (c) Explain the role of Connection, Statement, and ResultSet in JDBC. [[CO1](REMEMBER/LOCQ)]
- 4 + 4 + 4 = 12**

Group - D

6. (a) Describe the architecture of the Hibernate framework and its major components. [[CO1](REMEMBER/LOCQ)]
(b) Write the steps required to configure Hibernate and perform a simple CRUD operation. [[CO2](APPLY/IOCQ)]
(c) Analyse how Hibernate improves database portability and reduces boilerplate code in Java applications. [[CO3](ANALYSE/HOCQ)]
4 + 4 + 4 = 12
7. (a) Explain the principles of REST architecture used in web services. [[CO1](REMEMBER/LOCQ)]
(b) Design a simple REST API in Java that performs CRUD operations using HTTP methods. [[CO2](APPLY/IOCQ)]
(c) Explain the commonly used HTTP methods (GET, POST, PUT, DELETE) in RESTful services. [[CO1](REMEMBER/LOCQ)]
4 + 4 + 4 = 12

Group - E

8. (a) Define Lambda expressions and explain their syntax in Java. [[CO1](REMEMBER/LOCQ)]
(b) Write a Java program demonstrating the use of Lambda expressions to sort a list of integers. [[CO2](APPLY/IOCQ)]
(c) Describe the different intermediate and terminal operations in Java Streams. [[CO1](REMEMBER/LOCQ)]
4 + 4 + 4 = 12
9. (a) Explain the architecture and components of Apache Kafka. [[CO1](REMEMBER/LOCQ)]
(b) Illustrate how a Kafka producer sends messages to a Kafka topic using Java. [[CO2](APPLY/IOCQ)]
(c) Explain the purpose of machine learning libraries in Java such as Weka, Deeplearning4j, and ND4J. [[CO1](REMEMBER/LOCQ)]
4 + 4 + 4 = 12
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Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	54.16	33.33	12.51

