Core Java Lab Exam, 2 Hours)

Each question carries 40 marks .

Question Code: ABC

Q1. OOPs – Hotel Booking System (Hierarchical Inheritance with All OOPs Concepts)

Problem Statement:

Design and implement a Java program for a Hotel Booking System using complete OOPs concepts such as classes, objects, constructors, inheritance, overriding, static/non-static members, and interfaces.

Superclass: Hotel

Properties: hotelId, hotelName, location, rating

Methods: displayHotelDetails(), getHotelInfo()

Static Members: totalHotels, showTotalHotels()

Constructor: Parameterized constructor to initialize all properties

Subclass 1: Room extends Hotel

Properties: roomId, roomType, pricePerNight, availability

Methods: calculateRoomRevenue(int days) → Calculate total revenue for given days, override displayHotelDetails()

Implements Interface: Bookable

Interface Method: bookRoom() → Logic to mark room as booked

Subclass 2: Customer extends Hotel

Properties: customerId, customerName, checkInDate, checkOutDate

Methods: calculateStayDuration() → Compute total stay duration, override displayHotelDetails()

Interface: Bookable

Method: bookRoom()

Main Method Requirements:

Create objects for Hotel, Room, and Customer and demonstrate:

Constructor overloading

Static and non-static usage

Inheritance and overriding

Interface implementation

Display all details and business logic outputs (calculateRoomRevenue, calculateStayDuration).

Q2. ArrayList – CRUD Operations

Question Code: DEF

Problem Statement:

Create a Java program to manage Hotel Room Details using an ArrayList of Room objects.

Properties: roomId, roomType, pricePerNight, availability

Requirements:

1. Perform CRUD operations using ArrayList:

Add a new room

Update price or availability

Delete a room

Display all room details

2. Business Logic Method:

calculateTotalAvailableRooms() → Return total number of available rooms.

Implement CRUD operations using iterators.

Q3. File Handling – CRUD Operations

Question Code: IGK

Problem Statement:

Write a Java program to manage Hotel Customer Bookings using File Handling (object serialization).

Properties: customerId, customerName, roomId, checkInDate, checkOutDate

Requirements:

1. Perform CRUD operations on a file:

   Add new booking

   Update booking details

   Delete booking

   Display all bookings

2. Business Logic Method:

   calculateInventoryValue() → Compute total number of bookings present in the file.

Use file input/output streams for persistence.

Q4. HashMap – CRUD Operations

Question Code: LMN

Problem Statement:

Develop a Java program to manage Hotel Staff Records using HashMap.

Properties: staffId, staffName, designation, salary

Requirements:

1. Use HashMap<Integer, Staff> where key = staffId.

2. Perform CRUD operations:

   Add staff

   Update staff salary

   Delete staff record

   Display all staff details

3. Business Logic Method:

   calculateTotalSalary() → Calculate total salary expenditure of the hotel.

OR

Q5. JDBC – CRUD Operations

Question Code: LMN

Problem Statement:

Develop a JDBC-based application to manage Hotel Booking Information in a MySQL database.

Table Name: hotel_bookings

Column Name	Data Type
booking_id	INT PRIMARY KEY
customer_name	VARCHAR(50)
room_id	INT
check_in_date	DATE
check_out_date	DATE
total_amount	DOUBLE

Requirements:

1. Perform CRUD operations using JDBC:

   Insert new booking

   Update total_amount or check_out_date

   Delete a booking

   Display all bookings

2. Business Logic Method:

   Calculate total revenue by summing up total_amount from all records.