

# Cognizant GenC Complete Question Bank (2025)

## Assessment Structure Overview

- **Cluster 1:** Java, ANSI SQL, HTML, CSS, JavaScript
- **Cluster 2:** Python, ANSI SQL, Cloud Fundamentals
- **Cluster 3:** C#, ANSI SQL, HTML, CSS, JavaScript

## Complete Cluster-Wise Question Bank

### Cluster 1: Java + SQL + Web Development

#### Java Programming Questions

1. Write a Java program to check if a number is prime
2. Implement bubble sort algorithm in Java
3. Find the maximum element in an array using Java
4. Write a Java program to reverse a string
5. Implement binary search in Java
6. Create a Java class for student with getter/setter methods
7. Write a Java program to find factorial of a number
8. Implement selection sort in Java
9. Write a Java program to check palindrome
10. Find second largest element in array using Java
11. Implement a HashSet using chaining for collision resolution
12. Write a Java program to find the longest common subsequence
13. Create a multi-threaded program to process array elements concurrently
14. Implement observer design pattern in Java
15. Write a Java program to serialize and deserialize an object

#### SQL Query Questions (Java/Backend Focus)

1. Write a query to create a table named Employee with Employee\_ID, Name, Age, Address, Salary
2. Insert multiple records into Employee table
3. Select employees with salary between 60000 and 80000
4. Write a query to find average salary by department
5. Count number of employees in each department

6. Write a LEFT JOIN query to combine Employee and Department tables
7. Find employees with highest and lowest salary
8. Update salary of employees in specific department by 10%
9. Delete employees with salary less than 30000
10. Write a query to find duplicate records in a table
11. Write a recursive CTE to find employee hierarchy
12. Create a stored procedure with input/output parameters
13. Implement row-level security using views and roles
14. Write a query to find the median salary by department
15. Create an audit trigger to track data changes

## **Web Development Questions**

1. Create a basic HTML page structure with head and body
2. Design a simple HTML form with name, email, message fields
3. Build an HTML table displaying product data
4. Create a navigation bar with Home, About, Services, Contact links
5. Write CSS to set background color and font styling
6. Create a responsive layout using CSS flexbox
7. Write JavaScript to change text content of a paragraph
8. Implement form validation using JavaScript
9. Create an image gallery with HTML and CSS
10. Write JavaScript function to calculate sum of two numbers
11. Create a responsive e-commerce product catalog with filters
12. Implement a real-time chat interface using WebSockets
13. Build a drag-and-drop file upload component
14. Create a progressive web app with offline functionality
15. Implement user authentication with JWT tokens

## **Cluster 2: Python + SQL + Cloud Computing**

### **Python Programming Questions**

1. Write a Python program to check if a number is palindrome
2. Find the maximum subarray sum using Kadane's algorithm in Python
3. Implement binary search algorithm in Python
4. Write a Python program to find prime numbers up to N

5. Create a Python function to reverse a list
6. Implement bubble sort in Python
7. Write a Python program to count vowels in a string
8. Find factorial of a number using recursion in Python
9. Write a Python program to merge two sorted lists
10. Implement linear search in Python
11. Implement a decorator for function timing and logging
12. Write a Python program using asyncio for concurrent processing
13. Create a context manager for database connections
14. Implement a custom iterator for tree traversal
15. Write a Python script for web scraping with error handling

### **SQL Query Questions (Python/Backend Focus)**

1. Write a query to retrieve specific columns from Employee table
2. Create a view to display employee details with department names
3. Write a query to find employees hired in specific date range
4. Use GROUP BY to find total salary by department
5. Write a subquery to find employees with above average salary
6. Create an index on Employee table for better performance
7. Write a query using HAVING clause to filter grouped results
8. Implement UNION to combine results from two SELECT statements
9. Write a query to find nth highest salary
10. Use window functions to rank employees by salary
11. Write a recursive CTE to find employee hierarchy
12. Create a stored procedure with input/output parameters
13. Implement row-level security using views and roles
14. Write a query to find the median salary by department
15. Create an audit trigger to track data changes

### **Cloud Computing Questions (Python/Cloud Focus)**

1. What are the main characteristics of cloud computing?
2. Explain the difference between IaaS, PaaS, and SaaS
3. What is Amazon Web Services (AWS)?
4. Define virtualization in cloud computing context
5. What are the benefits of cloud computing?

6. Explain public, private, and hybrid cloud models
7. What is scalability in cloud computing?
8. Define load balancing in cloud architecture
9. What is the difference between horizontal and vertical scaling?
10. Explain cloud security best practices
11. Design a microservices architecture for e-commerce application
12. Explain container orchestration using Kubernetes
13. Implement auto-scaling strategies for web applications
14. Design disaster recovery plan for cloud infrastructure
15. Compare serverless vs container-based architectures

### **Cluster 3: C# + SQL + Web Development**

#### **C# Programming Questions**

1. Write a C# program to find the largest element in an array
2. Implement a C# method to check if a string is palindrome
3. Write a C# program to calculate factorial using recursion
4. Create a C# class for Bank Account with deposit/withdraw methods
5. Implement binary search algorithm in C#
6. Write a C# program to reverse a string
7. Find the second largest number in array using C#
8. Implement insertion sort in C#
9. Write a C# program to count occurrences of a character in string
10. Create a C# method to validate email address format
11. Implement dependency injection container in C#
12. Write a C# program using async/await for parallel processing
13. Create a custom attribute and use reflection to process it
14. Implement a generic repository pattern for data access
15. Write a C# program for XML parsing and validation

#### **SQL Query Questions (C#/Backend Focus)**

1. Write a stored procedure to insert employee data
2. Create a trigger to update salary history when employee salary changes
3. Write a query to find employees with no department assigned
4. Use CASE statement to categorize employees by salary ranges

5. Write a query to find employees who joined in last 30 days
6. Create a function to calculate age from birthdate
7. Write a query using PIVOT to transform rows to columns
8. Implement error handling in SQL using TRY-CATCH
9. Write a query to find duplicate email addresses
10. Use CTE (Common Table Expression) to find hierarchical data
11. Write a recursive CTE to find employee hierarchy
12. Create a stored procedure with input/output parameters
13. Implement row-level security using views and roles
14. Write a query to find the median salary by department
15. Create an audit trigger to track data changes

### **Web Development Questions (C#/Web Focus)**

1. Create an HTML form with different input types (text, email, password, checkbox)
2. Design a responsive webpage layout using CSS Grid
3. Write JavaScript to validate form inputs before submission
4. Create a dropdown menu using HTML and CSS
5. Implement image slider using JavaScript
6. Build a contact form with client-side validation
7. Create a CSS animation for button hover effects
8. Write JavaScript to dynamically add/remove list items
9. Design a card-based layout using CSS Flexbox
10. Implement local storage functionality using JavaScript
11. Create a responsive e-commerce product catalog with filters
12. Implement a real-time chat interface using WebSockets
13. Build a drag-and-drop file upload component
14. Create a progressive web app with offline functionality
15. Implement user authentication with JWT tokens

## **Coding Challenge Section (Common to All Clusters)**

## Easy Level

- **Bill Generation for Items:** Generate bill for pizzas (₹100), puffs (₹20), and cold drinks (₹10)
  - *Sample Input:* Number of pizzas: 10, Number of puffs: 12, Number of cold drinks: 5
  - *Sample Output:* Total Price: ₹1290
  - *Approach:* Calculate itemwise cost, sum all
- **Palindrome Check:** Check if a number is palindrome and handle negative inputs
  - *Sample Input:* 121, 21212, -121
  - *Sample Output:* Palindrome, Palindrome, invalid input
  - *Approach:* Reverse digits, compare with original
- **Prime Number Check:** Check if a given number is prime
  - *Sample Input:* 17, 25, 2
  - *Sample Output:* true, false, true
  - *Approach:* Check divisibility till  $\sqrt{n}$

## Medium Level

- **Right-Angled Triangle Pattern:** Print star pattern of given rows
  - *Sample Input:* 6
  - *Sample Output:* \* \n \*\* \n \*\*\* ...
  - *Approach:* Use nested loops
- **Maximum Subarray Sum (Kadane's Algorithm):** Find max contiguous subarray sum
  - *Sample Input:* [-2, 1, -3, 4, -1, 2, 1, -5, 4]
  - *Sample Output:* 6 (from subarray [4, -1, 2, 1])
  - *Approach:* Track and reset running sums
- **Buzz Number Check:** Check if number ends with 7 or divisible by 7
  - *Sample Input:* 42, 107, 147
  - *Sample Output:* true, true, true
  - *Approach:* Use modulo operations

## Advanced Level

- **Integer to Character Conversion:** Convert ASCII value to character
  - *Sample Input:* 65, 66, 67, 68
  - *Sample Output:* 65 A, 66 B, 67 C, 68 D
  - *Approach:* Type cast int to character

# Tips, Patterns, and Final Checklist

## Common Coding Patterns

- Two pointer technique (arrays)
- Sliding window & Kadane's algorithm
- Palindrome, substring, LCS (strings)
- Tree traversal, recursion, dynamic programming
- SQL joins, subqueries, CTE, views, triggers
- Frontend layout, JS DOM events, validation
- Cloud design: microservices, autoscaling, DR

**Good luck with your Cognizant GenC Assessment!**