

Contestant ID: \_\_\_\_\_

Time: \_\_\_\_\_

Rank: \_\_\_\_\_



# SQL FUNDAMENTALS

## (345)

## REGIONAL 2026

### CONCEPT KNOWLEDGE:

Multiple Choice (50 @ 2 points each)

\_\_\_\_\_ (100 points)

**Test Time: 60 minutes**

**GENERAL GUIDELINES.**

Failure to follow any of these rules may result in disqualification:

1. **Submission Requirements:** Contestants must submit this test booklet along with any printouts.
2. **Permitted Items:** Only the equipment, supplies, and materials specified for this event are allowed in the testing area. Previous BPA tests and sample tests (whether handwritten, photocopied, or typed) are not permitted.
3. **Electronic Devices:** Electronic devices will be monitored according to ACT standards.

### Multiple Choice Questions

Identify the letter of the choice that *best* completes the statement or answers the question.

1. When defining an auto-incrementing primary key in SQL, which data type should be used?
  - A. CHAR
  - B. VARCHAR
  - C. INT
  - D. DATE
2. What SQL clause is used together with aggregate functions to group rows that have the same values into summary rows?
  - A. GROUP BY
  - B. ORDER BY
  - C. PARTITION BY
  - D. SUMMARIZE BY
3. When designing a database, choosing the appropriate data type for a column is important to:
  - A. Reduce data redundancy
  - B. Improve query performance
  - C. Ensure data accuracy and efficiency in storage
  - D. All are correct
4. To ensure that every row in a table 'employees' must have a value for the 'email' column, which constraint should be applied?
  - A. UNIQUE
  - B. PRIMARY KEY
  - C. NOT NULL
  - D. CHECK (email IS NOT NULL)
5. What does the ALTER DATABASE command in SQL Server primarily used for?
  - A. To rename a database
  - B. To change database configuration settings
  - C. To delete a database
  - D. To create a new database
6. What SQL functions allow you to perform operations on a set of rows and return a single summary value?
  - A. Subqueries
  - B. Joins
  - C. Aggregate functions
  - D. Indices
7. Which of the following is NOT a valid SQL aggregate function?
  - A. SUM()
  - B. AVG()
  - C. COUNT()
  - D. COMPILE()

8. To create a non-unique index on a column or a set of columns in SQL Server, which keyword should you avoid using?
  - A. CREATE INDEX
  - B. NONCLUSTERED
  - C. UNIQUE
  - D. INCLUDE
9. In SQL, which command is used to add a constraint after a table has already been created?
  - A. ALTER TABLE table\_name ADD CONSTRAINT constraint\_name;
  - B. UPDATE TABLE table\_name SET CONSTRAINT constraint\_name;
  - C. MODIFY TABLE table\_name CONSTRAINT constraint\_name;
  - D. CREATE CONSTRAINT constraint\_name ON table\_name;
10. What is the main purpose of using a transaction in a database?
  - A. To ensure data integrity by grouping multiple operations so they are saved only if they all succeed
  - B. To lock the database
  - C. To increase performance
  - D. To create a backup of the current state
11. Which normalization form is primarily concerned with reducing the redundancy of data in a database?
  - A. First Normal Form (1NF)
  - B. Second Normal Form (2NF)
  - C. Third Normal Form (3NF)
  - D. All are correct
12. How do you enforce a check on a salary column (salary\_monthly) to ensure values are greater than zero?
  - A. ALTER TABLE employees ADD CONSTRAINT salary\_check CHECK (salary\_monthly > 0);
  - B. UPDATE employees SET salary CHECK (salary\_monthly > 0);
  - C. CREATE CONSTRAINT CHECK (salary\_monthly > 0) ON employees;
  - D. INSERT INTO employees (salary) VALUES CHECK (salary\_monthly > 0);
13. Which of these is a benefit of indexing a database column?
  - A. Decreases storage space
  - B. Increases update speed
  - C. Improves query performance
  - D. All of the above

14. What is the correct syntax to create a view in SQL called 'high\_earners' that shows all employees from the 'employees' table that have a salary above \$50,000?
- A. CREATE VIEW high\_earners AS SELECT \* FROM employees WHERE salary > 50000;
  - B. CREATE VIEW employees AS SELECT \* WHERE salary > 50000;
  - C. VIEW high\_earners AS SELECT \* FROM employees WHERE salary > 50000;
  - D. SELECT \* INTO high\_earners FROM employees WHERE salary > 50000;
15. Which SQL statement below will omit repeating values from the results of a query?
- A. SELECT DISTINCT column\_name FROM table\_name;
  - B. SELECT UNIQUE column\_name FROM table\_name;
  - C. GET DIFFERENT column\_name FROM table\_name;
  - D. SELECT column\_name WITHOUT DUPLICATES FROM table\_name;
16. Which SQL statement is used to add a new record to a database table?
- A. SELECT \* FROM table\_name;
  - B. INSERT INTO table\_name (column1, column2) VALUES (value1, value2);
  - C. UPDATE table\_name SET column1 = value1 WHERE condition;
  - D. DELETE FROM table\_name WHERE condition;
17. How do you select all columns and all rows from a table named "employees"?
- A. INSERT INTO employees (column) VALUES (value);
  - B. UPDATE employees SET column = value;
  - C. SELECT \* FROM employees;
  - D. DELETE FROM employees WHERE column = value;
18. Which command is used to remove rows from a table?
- A. DELETE FROM table\_name WHERE condition;
  - B. REMOVE FROM table\_name WHERE condition;
  - C. DROP ROWS FROM table\_name WHERE condition;
  - D. ERASE FROM table\_name WHERE condition;
19. To update the salary of an employee with ID 5 to 50000 in the employees table, which SQL statement should be used?
- A. UPDATE employees SET salary = 50000 WHERE ID = 5;
  - B. CHANGE employees SET salary = 50000 WHERE ID = 5;
  - C. MODIFY employees SET salary = 50000 WHERE ID = 5;
  - D. ALTER employees SET salary = 50000 WHERE ID = 5;
20. How do you select the name of employees from the "employees" table where the employee's ID is 5?
- A. SELECT name FROM employees WHERE ID = 5;
  - B. FIND name FROM employees WHERE ID = 5;
  - C. GET name FROM employees WHERE ID = 5;
  - D. PICK name FROM employees WHERE ID = 5;

21. What SQL clause is used to specify a condition to limit what data is returned while fetching data from a single table?
- A. FROM
  - B. WHERE
  - C. AND
  - D. OR
22. Which SQL keyword is used to retrieve a unique set of records without duplicate values?
- A. UNIQUE
  - B. DISTINCT
  - C. SINGLE
  - D. DIFFERENT
23. When joining tables using the INNER JOIN clause, what kind of records are returned?
- A. Records that have matching values in both tables.
  - B. Only records from the first table, regardless of the second table.
  - C. Only records from the second table, regardless of the first table.
  - D. All records from both tables, with NULL in columns where there is no match.
24. To select all employees' names and their respective department names from "employees" and "departments" tables, which SQL statement should be correct?
- A. SELECT employees.name, departments.name FROM employees INNER JOIN departments ON employees.department\_id = departments.id;
  - B. SELECT employees.name, departments.name FROM employees JOIN departments ON employees.department\_id = departments.id;
  - C. SELECT employees.name AND departments.name FROM employees, departments;
  - D. JOIN employees.name, departments.name ON employees.department\_id = departments.id;
25. What is the result of the UNION operator between two SQL queries?
- A. Returns only distinct values found in both queries.
  - B. Returns all values found in both queries, including duplicates.
  - C. Returns the intersection of two queries.
  - D. Merges the columns from two queries into a single set of columns.
26. Which SQL function is used to return the sum of a numeric column over all records in the result of a query?
- A. SUM(column\_name)
  - B. TOTAL(column\_name)
  - C. ADD(column\_name)
  - D. COUNT(column\_name)
27. To find the average salary from the "employees" table, which SQL statement is used?
- A. SELECT AVERAGE(salary) FROM employees;
  - B. SELECT SUM(salary) / COUNT(salary) FROM employees;
  - C. SELECT AVG(salary) FROM employees;
  - D. SELECT MEAN(salary) FROM employees;

28. How do you create a view named "EmpView" that shows the employee names and salaries from the "employees" table?
- A. CREATE VIEW EmpView AS SELECT name, salary FROM employees;
  - B. MAKE VIEW EmpView AS SELECT name, salary FROM employees;
  - C. BUILD VIEW EmpView AS SELECT name, salary FROM employees;
  - D. SET UP VIEW EmpView AS SELECT name, salary FROM employees;
29. Which statement initiates a transaction in SQL?
- A. START TRANSACTION;
  - B. BEGIN TRANSACTION;
  - C. OPEN TRANSACTION;
  - D. INITIATE TRANSACTION;
30. Which of the following methods are commonly used to perform a database backup, considering that ANSI SQL does not standardize backup procedures?
- A. By exporting the database schema and data to an external file (e.g., using logical export tools).
  - B. By copying physical database files at the file system level, often requiring coordination with the DBMS.
  - C. By using DBMS-specific commands (e.g., BACKUP DATABASE), if supported.
  - D. All of the above methods may be used, depending on the DBMS and context.
31. Which ANSI SQL keyword is used to define a stored procedure?
- A. DEFINE PROCEDURE
  - B. CREATE PROCEDURE
  - C. SET PROCEDURE
  - D. BUILD PROCEDURE
32. What does the INTERSECT operator do?
- A. Finds and returns the common records between two SELECT statements.
  - B. Combines records from two SELECT statements without duplicates.
  - C. Joins two tables based on a related column.
  - D. Removes all records in one SELECT statement that are present in another.
33. How do you use an aggregate function to count the number of employees in the "employees" table?
- A. SELECT COUNT (employees)
  - B. SELECT SUM (employees)
  - C. SELECT COUNT (\*) FROM employees;
  - D. SELECT TOTAL (employees)

34. Which command is used to remove a view named "EmpView" from the database?
- A. DELETE VIEW EmpView;
  - B. DROP VIEW EmpView;
  - C. REMOVE VIEW EmpView;
  - D. ERASE VIEW EmpView;
35. Which command ensures the changes made by transactions are saved to the database?
- A. COMMIT;
  - B. SAVE;
  - C. CONFIRM;
  - D. LOCK;
36. To list all unique job titles from the "employees" table, which SQL query should you use?
- A. LIST DISTINCT job\_title FROM employees;
  - B. SELECT DISTINCT job\_title FROM employees;
  - C. SHOW UNIQUE job\_title FROM employees;
  - D. GET DISTINCT job\_titles FROM employees;
37. What does the LEFT JOIN operation do?
- A. Returns all records from the left table, and the matched records from the right table.
  - B. Returns all records from the right table, and the matched records from the left table.
  - C. Combines all records from both tables, filling in NULLs for missing matches in the second table.
  - D. Combines all records from both tables, filling in NULLs for missing matches in the first table.
38. In a transaction, what command is used to revert changes if an error occurs?
- A. REVERSE;
  - B. ROLLBACK;
  - C. UNDO;
  - D. BACKTRACK;
39. Which SQL clause is used to sort the result set of a query by one or more columns?
- A. GROUP BY
  - B. ORDER BY
  - C. SORT BY
  - D. ARRANGE BY
40. Which one of the following SQL statements will return the minimum salary from the "employees" table?
- A. SELECT MIN (salary) FROM employees;
  - B. SELECT LOWEST (salary) FROM employees;
  - C. SELECT SMALLEST (salary) FROM employees;
  - D. SELECT TINIEST (salary) FROM employees;



41. Which SQL keyword is used in a SELECT statement to restrict the number of records returned to 5?
- A. FETCH FIRST 5 ROWS ONLY
  - B. LIMIT 5
  - C. RANGE 5
  - D. MAXIMUM 5
42. What is the primary purpose of a stored procedure in ANSI SQL?
- A. To store data temporarily
  - B. To automate and encapsulate SQL operations for reuse
  - C. To perform automated database backups
  - D. To log all changes made to the database
43. How would you change an existing employee's (id = 123) department to 56 in the "employees" table using SQL?
- A. ALTER TABLE employees MODIFY department = 'New Department' WHERE id = 123;
  - B. UPDATE employees SET department = 56 WHERE id = 123;
  - C. CHANGE employees SET department = 56 WHERE id = 123;
  - D. REPLACE employees SET department = 56 WHERE id = 123;
44. What is the correct syntax for creating a view "EmployeeView" to show 'name' and 'department' from the "employees" table?
- A. CREATE VIEW EmployeeView AS SELECT name, department FROM employees;
  - B. DEFINE VIEW EmployeeView AS SELECT name, department FROM employees;
  - C. SET VIEW EmployeeView AS SELECT name, department FROM employees;
  - D. NEW VIEW EmployeeView AS SELECT name, department FROM employees;
45. To concatenate the first name and last name of an employee into a full name in a SELECT statement, which function is commonly used?
- A. SELECT first\_name || ' ' || last\_name AS full\_name FROM employees;
  - B. MERGE(first\_name, ' ', last\_name) AS full\_name
  - C. JOIN(first\_name, ' ', last\_name) AS full\_name
  - D. COMBINE(first\_name, ' ', last\_name) AS full\_name
46. In SQL, which command is used to remove a table schema and its data permanently?
- A. DROP TABLE table\_name;
  - B. DELETE TABLE table\_name;
  - C. REMOVE TABLE table\_name;
  - D. ERASE TABLE table\_name;

47. What is the purpose of the SQL HAVING clause?
- A. To specify a selection condition for a group or an aggregate.
  - B. To specify a selection condition for the columns in the SELECT statement.
  - C. To sort the result set of a query.
  - D. To limit the number of rows returned in the result set.
48. How can you insert multiple rows into a table named "products" with columns "product\_id" and "product\_name"?
- A. INSERT INTO products (product\_id, product\_name) VALUES (1, 'Product1'), (2, 'Tablet'), (2, 'Product2');
  - B. INSERT MULTIPLE INTO products (product\_id, product\_name) VALUES (1, 'Product1'), (2, 'Product2');
  - C. ADD INTO products (product\_id, product\_name) VALUES (1, 'Product1'), (2, 'Product2');
  - D. INSERT INTO products SET (product\_id, product\_name) = (1, 'Product1'), (2, 'Product2');
49. For ensuring transactional integrity, which property ensures that a transaction can be safely retried in case of a failure?
- A. Consistency
  - B. Durability
  - C. Atomicity
  - D. Isolation
50. How often should a full database backup typically be performed to support data recovery and minimize data loss?
- A. Once a year
  - B. Only after major schema changes
  - C. On a regular schedule based on business needs and data change frequency
  - D. Only when the database server is restarted