

DBMS

SQL – HARD LEVEL

1. Which of the following correctly describes a correlated subquery?
A) Subquery that runs independently of the outer query
B) Subquery that refers to a column from the outer query
C) Subquery that can only return one row
D) Subquery that uses GROUP BY
Answer: B
2. Which SQL clause is used to implement window functions like RANK() or ROW_NUMBER()?
A) GROUP BY
B) OVER()
C) HAVING
D) PARTITION BY only
Answer: B
3. In SQL, which isolation level allows dirty reads?
A) Serializable
B) Repeatable Read
C) Read Committed
D) Read Uncommitted
Answer: D
4. Which of the following is true about SQL recursive CTEs?
A) They cannot be nested
B) They must contain an anchor member and a recursive member
C) They are only supported in MySQL
D) They don't require a termination condition
Answer: B
5. The difference between INNER JOIN and NATURAL JOIN is:
A) Natural join matches columns with same names automatically
B) Inner join ignores columns with same names
C) Natural join can be done only on primary keys
D) Both are identical always
Answer: A
6. Which operator is used to combine result sets and remove duplicates?
A) UNION ALL
B) INTERSECT
C) UNION
D) MINUS
Answer: C

7. In SQL, the EXISTS clause returns TRUE if:

- A) The subquery returns at least one row
- B) The subquery returns NULL
- C) The outer query has no rows
- D) The subquery returns an empty set

Answer: A

8. Which aggregate function can be used with DISTINCT to remove duplicates?

- A) COUNT
- B) MAX
- C) SUM
- D) All of the above

Answer: A

9. Which keyword ensures that an UPDATE affects only rows returned by a subquery?

- A) EXISTS
- B) WHERE
- C) HAVING
- D) LIMIT

Answer: B

10. The RANK() function differs from DENSE_RANK() because:

- A) RANK skips numbers when there are ties
- B) DENSE_RANK assigns same rank but skips numbers
- C) RANK does not allow duplicates
- D) DENSE_RANK allows only unique values

Answer: A

11. Which statement about SQL triggers is true?

- A) Triggers can be invoked manually
- B) Triggers are executed automatically on specific events
- C) Triggers can only be defined for SELECT statements
- D) Triggers cannot access OLD or NEW values

Answer: B

12. In SQL, a deadlock occurs when:

- A) Two queries request the same lock sequentially
- B) Two queries wait on each other's locked resources
- C) One query fails due to syntax error
- D) A foreign key is violated

Answer: B

13. Which SQL set operator returns rows present in the first query but not in the second?

- A) INTERSECT
- B) UNION
- C) MINUS / EXCEPT
- D) DIFFERENCE

Answer: C

14. The WITH CHECK OPTION in a SQL view ensures:

- A) Only INSERT is allowed

- B) No duplicate rows exist
- C) Only rows satisfying the view condition can be modified
- D) All rows are accessible

Answer: C

15. Which keyword is used to lock rows explicitly in SQL Server during SELECT?

- A) FOR UPDATE
- B) WITH (ROWLOCK)
- C) LOCK TABLE
- D) PESSIMISTIC LOCK

Answer: B

16. What does the SQL clause FETCH FIRST 5 ROWS ONLY do?

- A) Deletes first 5 rows
- B) Limits result to 5 rows
- C) Skips 5 rows
- D) Fetches last 5 rows

Answer: B

17. In SQL, an index can become fragmented due to:

- A) Joins
- B) Frequent INSERT and DELETE operations
- C) Grouping queries
- D) Constraints

Answer: B

18. Which is true about NULL in SQL?

- A) NULL equals NULL
- B) NULL is greater than zero
- C) NULL is unknown and cannot be compared using =
- D) NULL is treated as empty string

Answer: C

19. Which clause allows filtering after aggregation in SQL?

- A) WHERE
- B) HAVING
- C) GROUP BY
- D) ORDER BY

Answer: B

20. Which statement about SQL stored procedures is false?

- A) They can accept parameters
- B) They can return values
- C) They always execute automatically on events
- D) They can contain multiple SQL statements

Answer: C

21. Which SQL standard feature enforces that a column must always contain a unique value or NULL?

- A) PRIMARY KEY
- B) UNIQUE

- C) CHECK
- D) FOREIGN KEY

Answer: B

22. Which of the following is an ACID property ensuring transaction results are permanent?

- A) Atomicity
- B) Consistency
- C) Isolation
- D) Durability

Answer: D

23. Which join retrieves all records from the left table and matched records from the right?

- A) FULL OUTER JOIN
- B) LEFT JOIN
- C) RIGHT JOIN
- D) CROSS JOIN

Answer: B

24. The default isolation level in most SQL databases is:

- A) Read Uncommitted
- B) Read Committed
- C) Repeatable Read
- D) Serializable

Answer: B

25. Which of the following can be indexed in SQL?

- A) Primary key
- B) Unique key
- C) Foreign key
- D) All of the above

Answer: D

26. Which operator is used to test for pattern matching in SQL?

- A) =
- B) LIKE
- C) MATCH
- D) COMPARE

Answer: B

27. Which SQL feature ensures rollback in case of failure?

- A) Savepoints
- B) Commit
- C) Autoincrement
- D) Rollforward

Answer: A

28. The difference between DELETE and TRUNCATE is:

- A) DELETE removes rows one by one and logs each; TRUNCATE is faster
- B) DELETE resets identity; TRUNCATE does not
- C) TRUNCATE can use WHERE clause

D) DELETE cannot be rolled back

Answer: A

29. What is the purpose of SQL EXPLAIN plan?

A) Shows execution strategy of queries

B) Deletes query cache

C) Explains SQL syntax errors

D) Optimizes indexes automatically

Answer: A

30. Which SQL clause can be used inside an aggregate to consider only distinct values?

A) UNIQUE

B) DISTINCT

C) DIFFERENT

D) SEPARATE

Answer: B

31. Which constraint ensures that values in a column must satisfy a logical condition?

A) CHECK

B) UNIQUE

C) PRIMARY KEY

D) FOREIGN KEY

Answer: A

32. Which join may generate a Cartesian product?

A) CROSS JOIN

B) FULL OUTER JOIN

C) LEFT JOIN

D) RIGHT JOIN

Answer: A

33. Which SQL function is deterministic?

A) RAND()

B) GETDATE()

C) ABS()

D) NEWID()

Answer: C

34. What happens when you create an index on a frequently updated column?

A) Improves SELECT and slows down INSERT/UPDATE

B) Improves INSERT performance

C) No effect

D) Disables primary key

Answer: A

35. Which clause is mandatory in a recursive CTE?

A) LIMIT

B) UNION ALL

C) INTERSECT

D) GROUP BY

Answer: B

36. Which of the following prevents phantom reads?

- A) Read Committed
- B) Read Uncommitted
- C) Repeatable Read
- D) Serializable

Answer: D

37. What is the purpose of SQL Savepoint?

- A) To commit transaction
- B) To rollback partially within a transaction
- C) To define indexes
- D) To optimize joins

Answer: B

38. Which SQL constraint enforces referential integrity?

- A) PRIMARY KEY
- B) FOREIGN KEY
- C) UNIQUE
- D) DEFAULT

Answer: B

39. Which SQL clause can rank rows without collapsing groups?

- A) GROUP BY
- B) OVER()
- C) HAVING
- D) ORDER BY only

Answer: B

40. Which SQL command is used to change an existing table structure?

- A) UPDATE
- B) ALTER
- C) MODIFY
- D) RENAME

Answer: B

41. Which of these is true about SQL materialized views?

- A) They are always updated automatically
- B) They store results physically
- C) They are only supported in MySQL
- D) They cannot be refreshed

Answer: B

42. Which query will return the second-highest salary from an Employee table?

- A) SELECT MAX(salary) FROM Employee;
- B) SELECT MAX(salary) FROM Employee WHERE salary < (SELECT MAX(salary) FROM Employee);
- C) SELECT TOP 2 salary FROM Employee ORDER BY salary DESC;
- D) SELECT MIN(salary) FROM Employee;

Answer: B

43. Which SQL keyword is used to ensure no duplicates are returned in a query result?

- A) UNIQUE
- B) DISTINCT
- C) PRIMARY
- D) FILTER

Answer: B

44. Which type of index organizes data physically on disk?

- A) Non-clustered index
- B) Clustered index
- C) Hash index
- D) Bitmap index

Answer: B

45. Which SQL keyword is used to restart identity column values?

- A) RESET
- B) RESEED
- C) RESTART
- D) ALTER

Answer: B

46. Which of the following is true about SQL MINUS operator?

- A) Returns rows common to both queries
- B) Returns rows from first query not in second
- C) Returns union of queries
- D) Works only on primary keys

Answer: B

47. Which SQL join may return unmatched rows from both tables?

- A) INNER JOIN
- B) LEFT JOIN
- C) RIGHT JOIN
- D) FULL OUTER JOIN

Answer: D

48. Which SQL keyword is used in case statements for branching logic?

- A) IF
- B) CASE
- C) SWITCH
- D) CHOOSE

Answer: B

49. Which SQL feature allows queries to access previous row's values?

- A) Window functions with LAG/LEAD
- B) Recursive CTE
- C) Triggers
- D) Subqueries only

Answer: A

50. Which isolation level provides the highest data consistency?

- A) Read Committed

B) Read Uncommitted

C) Serializable

D) Repeatable Read

Answer: C