**Questions & Answers Usenko Bohdana**

**Q1) Which of the following is the correct order of occurrence in a typical SQL statement?**

A. select, group by, where, having

B. select, where, group by, having

C. select, where, having, group byselect, having, where, group by

D. select, having, where, group by

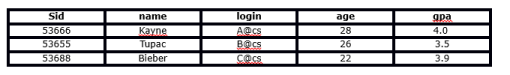
**Solution: B**. The correct order of occurrence in a typical SQL statement is:

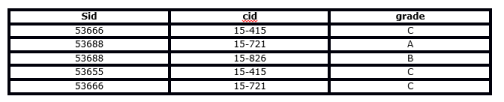
select, from, where, group by, having, order by.

"Where" always comes before "group by" and "having" always comes after "group by"

**Question Context: 2 to 12**

**STUDENT**

**ENROLLED**

**Q2) Which of the following is the correct outcome of the SQL query below?** Query: SELECT cid FROM ENROLLED WHERE grade = 'C'

A. Extract the course ids(cid) where student receive the grade C in the course

B. Extract the unique course ids(cid) where student receive the grade C in the course

C. Error

D. None of these

**Solution:**

The correct outcome of the SQL query "SELECT cid FROM ENROLLED WHERE grade = 'C'" would be to extract the course IDs (cid) where students received a grade of C in the course (A).

**Q3) Which of the following is the correct outcome of the SQL query below?** Query: SELECT DISTINCT cid FROM ENROLLED WHERE grade = 'C'

A. Extract the course ids where student receive the grade C in the course

B. Extract the Distinct course ids where student receive the grade of C in the course C. Error

D. None of these

**Solution:** By using DISTINCT you can extract the distinct course ids where student’s grade equal “C”.

**Q4) Which of the following is the correct outcome of the SQL query below?**

Query: SELECT name, cid FROM student, enrolled WHERE student.sid = enrolled.sid AND enrolled.grade = 'C'

A. Returns the name of all students and their corresponding course ids

B. Returns the name of students and their corresponding course id where they have received grade C

C. Error

D. None of these

**Solution:**

Therefore, the correct option is **B.** The above query first joined the ENROLLED and STUDENT tables then it will evaluate the WHERE condition and then it will return the name of students and corresponding course id where they grade is “C”.

Option A, is not correct because the query is specifically filtering for only those students who received a grade of C.

**Q5) Which of the following is the correct outcome of the SQL query below?**

Query: SELECT student.name, enrolled.grade FROM student, enrolled WHERE student.sid = enrolled.sid AND enrolled.cid = '15-415' AND enrolled.grade IN ('A', 'B')

A. Returns the name, grade of the students who took course ’15-415′ and got a grade’ A’ or ‘B’ in that course

B. Returns the name, grade of the students who took the course ’15-415′ but didn’t get grade ‘A’ or ‘B’ in that course

C. Error

D. None of these

**Solution:** The query first performs an inner join between the ENROLLED and STUDENT tables, then applies the conditions specified in the WHERE clause. It will return the name and grade of students who took the course '15-415' and received a grade of 'A' or 'B' in that course. However, in the given two tables, the query will not return any records in the output.

**Q6) Which of the following query will find all the unique students who have taken more than one course?**

A. SELECT DISTINCT e1.sid FROM enrolled AS e1, enrolled AS e2 WHERE e1.sid != e2.sid AND e1.cid != e2.cid

B. SELECT DISTINCT e1.sid FROM enrolled AS e1, enrolled AS e2 WHERE e1.sid = e2.sid AND e1.cid = e2.cid

C. SELECT DISTINCT e1.sid FROM enrolled AS e1, enrolled AS e2 WHERE e1.sid != e2.sid AND e1.cid != e2.cid

D. SELECT DISTINCT e1.sid FROM enrolled AS e1, enrolled AS e2 WHERE e1.sid = e2.sid AND e1.cid != e2.cid

**Solution: D.** This query will perform a self-join on the ENROLLED table and then apply the condition e1.sid = e2.sid AND e1.cid != e2.cid. It could be a valid option to retrieve all unique students who have taken more than one course, with the assumption that the table has the necessary data to support this query.

**Q7) Which of the following statement will add a column ‘F\_name’ to the STUDENT table?**

A. ALTER TABLE Student add column ( F\_name varchar(20));

B. ALTER TABLE Student add F\_name varchar(20);

C. ALTER TABLE Student add (F\_name varchar(20));

D. ALTER TABLE Student add column (F\_name);

**Solution: Options A, C, D are not correct, because we don’t use** column **keyword before column name.**

**ALTER TABLE *table\_name***

**ADD *column\_name datatype*;**

**Q8) Which of the following query(s) will result in a successful insertion of a record in the STUDENT table?**

Query1: INSERT INTO student (sid, name, login, age, gpa) VALUES (53888, ‘Drake’, ‘drake@cs’, 29, 3.5)

Query2: INSERT INTO student VALUES (53888, ‘Drake’, ‘drake@cs’, 29, 3.5) A. Both queries will insert the record successfully

B. Query 1 will insert the record successfully and Query 2 will not C. Query 2 will insert the record successfully and Query 1 will not D. Both queries will not be able to insert the record successfully

**Solution:** both queries are correct, we can write table column names or not (Query 2 is a Short-hand version of insert command)

**Q9) ‘Sid’ in “ENROLLED” table is ‘Foreign Key’ referenced by ‘Sid’ in “STUDENT” table. Now you want to insert a record into the ENROLLED table.**

Which of the following option(s) will insert a row in ENROLLED table successfully?

1. INSERT INTO ENROLLED values(53667, '15-420', 'C');

2. INSERT INTO ENROLLED values(53666, '15-421', 'C');

3. INSERT INTO ENROLLED values(53667, '15-415', 'C');

4. INSERT INTO ENROLLED values(53666, '15-415', 'C');

A. 1 and 3

B. Only 3

C. 2 and 4

D. Only 4

**Solution:** Option 2 and 4 can be executed successfully because the 'Sid' column in the ENROLLED table allows only those values that are present in the 'Sid' column of the STUDENT table, which is enforced by the foreign key constraint. Only 5366 exist.

**Q10) Consider the following queries:**

Query1: select name from enrolled LEFT OUTER JOIN student on student.sid = enrolled.sid;

Query2: select name from student LEFT OUTER JOIN enrolled on student.sid = enrolled.sid;

**Which of the following option is correct?**

A. Queries 1 and 2 will give the same results

B. Queries 1 and 2 will give different results

C. Query 1 will produce an error and Query 2 will run successfully D. Query 2 will produce an error and Query 1 will run successfully

**Solution:** While it is true that in (LEFT, RIGHT, or FULL) OUTER joins, the order of the tables matters, it is not the only factor that affects the results. The order of the tables affects which table is considered the "left" and "right" table in the join, but the columns selected in the query can also affect the results.

In the case of the two queries given, both are performing a LEFT OUTER JOIN between the ENROLLED and STUDENT tables, but they are selecting different columns. Query 1 selects the "name" column from the ENROLLED table and joins it with the "name" column from the STUDENT table, while Query 2 selects the "name" column from the STUDENT table and joins it with the "name" column from the ENROLLED table.

Despite the different column selection, both queries will still return the same set of records because they are joining on the same "sid" column and using a LEFT OUTER JOIN, which ensures that all records from the ENROLLED table are included in the result set.

**Q11) Which of the following statements will modify the data type of “Sid” column in ENROLLED table?**

**Note: There is no foreign key relationship between tables STUDENT and ENROLLED.**

A. ALTER TABLE ENROLLED MODIFY (sid varchar(100));

B. ALTER TABLE ENROLLED MODIFY sid varchar(100);

C. ALTER TABLE ENROLLED MODIFY column (sid varchar(100));

D. ALTER TABLE ENROLLED MODIFY attribute (sid varchar(100)); **Solution:**  ALTER TABLE MODIFY is used to modify column definition in a table.Option A is incorrect because it includes parentheses around the column name, which is not necessary.

**Q12) Which of the following statement will remove the ‘Sid’ column from the ENROLLED table?**

**Note: There is no foreign key relationship between tables STUDENT and ENROLLED.**

A. ALTER TABLE ENROLLED DROP (sid varchar(10) );

B. ALTER TABLE ENROLLED DROP COLUMN (sid varchar(10) );

C. ALTER TABLE ENROLLED DROP COLUMN Sid;

D. ALTER TABLE ENROLLED MODIFY (sid);

**Solution:** The "ALTER TABLE DROP COLUMN" can be used to drop a column from the table. So Option C is the right answer.

**Q13) Which of the following command(s) is / are related to transaction control in SQL?**

A. ROLLBACK

B. COMMIT

C. SAVEPOINT

D. All of the above

**Solution:** All are related to transaction control in SQL.

**Q14) Which of the following is true for a primary key?**

A. It can take a value more than once

B. It can take null values

C. It can’t take null values

D. None of these

**Solution:** The correct answer is option C because in a relational schema, there can be only one primary key and it must have a non-null value.

**Q15) What is the difference between a primary key and a unique key?**

A. Primary key cannot be a date variable whereas unique key can be

B. You can have only one primary key whereas you can have multiple unique keys C. Primary key can take null values but unique key cannot null values

D. None of these

**Solution:** It is possible to define a date variable as a primary key in a table. In a relational schema, a table can have only one primary key, but it can have multiple unique keys. Unlike primary keys, unique keys may allow null values.

**Q16) Which of the following statement(s) is/are true for UPDATE in SQL?**

1. You can update only a single table using UPDATE command 2. You can update multiple tables using UPDATE command

3. In UPDATE command, you must list what columns to update with their new values (separated by commas).

4. To update multiple targeted records, you need to specify UPDATE command using the WHERE clause.

Select the correct option:

A. 1, 3 and 4

B. 2, 3 and 4

C. 3 and 4

D. 1 only

**Solution:**

1. You can update only a single table using UPDATE command - True
2. You can update multiple tables using UPDATE command - False. UPDATE command is used to modify data in a single table only.
3. In UPDATE command, you must list what columns to update with their new values (separated by commas) - True
4. To update multiple targeted records, you need to specify UPDATE command using the WHERE clause - True

**Q17) Which of the following is true for TRUNCATE in SQL?** A. It is usually slower than DELETE command

B. It is usually faster than DELETE command

C. There is no comparison between DELETE & TRUNCATE

D. Truncate command can be rolled back

E. None of these

**Solution:**

TRUNCATE is usually faster than the DELETE command because it does not log individual row deletions, freeing up system resources to perform other operations. Also, TRUNCATE does not fire

triggers and does not check constraints, which makes it faster than DELETE.(TRUNCATE is faster than delete because it is a ddl command.)

**Q18) Which of the following statement is correct about ‘CREATE TABLE’ command while creating a table?**

A. We need to assign a datatype to each column

B. We have flexibility in SQL. We can assign a datatype to column even after creating a table

C. It is mandatory to insert atleast a single row while creating a table D. None of these

**Solution:** When creating a table using the CREATE TABLE command in SQL, we need to assign a datatype to each column. This is mandatory, as it specifies the type of data that can be stored in that column.

**Q19) Which of the following are the synonyms for ‘column’ and ‘row’ of a table?**

1. Row = [Tuple, Record]

2. Column = [Field, Attribute]

3. Row = [Tuple, Attribute]

4. Columns = [Field, Record]

Select the correct option:

A. 1 and 2

B. 3 and 4

C. Only 1

D. Only 2

**Solution:** The synonyms for column are Field and Attribute.

The synonyms for row are Tuple and Record.

**Q20) Which of the following operator is used for comparing ‘NULL’ values in SQL?**

A. Equal

B. IS

C. IN

D. None of Above

**Solution:** The IS operator is used for comparing NULL values in SQL. We cannot use the equal (=) operator to compare NULL values, as NULL is not equal to any other value, including NULL itself.

**Q21) Which of the following statement(s) is/are true about “HAVING” and “WHERE” clause in SQL?**

1. WHERE” is always used before “GROUP BY” and HAVING after “GROUP BY”

2. WHERE” is always used after “GROUP BY” and “HAVING” before “GROUP BY”

3. “WHERE” is used to filter rows but “HAVING” is used to filter groups 4. “WHERE” is used to filter groups but “HAVING” is used to filter rows

Select the correct option:

A. 1 and 3

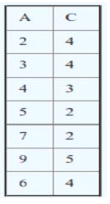
B. 1 and 4

C. 2 and 3

D. 2 and 4

**Solution:** In SQL, the HAVING clause is used to apply conditions to a GROUP BY query, and it is executed after the GROUP BY operation. If conditions need to be applied before the grouping operation, the WHERE clause is used instead.

**Q22) Identify, which of the following column “A” or “C” given in the below table is a “Primary Key” or “Foreign Key”?**

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**Note: We have defined ‘Foreign Key’ and ‘Primary Key’ in a single table** A. Column ‘A’ is Foreign Key and Column ‘C’ is Primary Key’

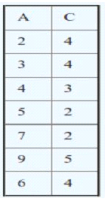
B. Column ‘C’ is Foreign Key and Column ‘A’ is ‘Primary Key’

C. Both can be ‘Primary Key’

D. Based on the above table, we cannot tell which column is ‘Primary Key’ and which is ‘Foreign Key’

**Solution:** In a table, if a column A contains unique values and no null values, it can be considered as the primary key of that table. On the other hand, if another column B contains values that are already present in column A, it can be considered as an example of a foreign key.

**Q23) What are the tuples additionally deleted to preserve reference integrity when the rows (2,4) are deleted from the below table. Suppose you are using ‘ON DELETE CASCADE’.**

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**Note: We have defined ‘Foreign Key’ and ‘Primary Key’ in single table** A. (5,2) , (7,2), (9,5)

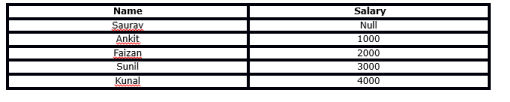
B. (5,2) , (7,2)

C. (5,2) , (7,2), (9,5), (3,4)

D. (5,2) , (7,2), (9,5),(6,4)

**Solution:** When deleting the rows (2,4) from the table, since 2 is a primary key, its corresponding foreign key occurrences, (5,2) and (7,2), must also be deleted. Additionally, since we are deleting 5 and 7, we must also delete their foreign key occurrence, (9,5). Note that there is no foreign key occurrence for 9.

**Q24) Suppose you are given a table/relation “EMPLOYEE” which has two columns (‘Name’ and ‘Salary’). The Salary column in this table has some NULL values. Now, I want to find out the records which have null values.**

**What will be the output for the following queries?**

Query 1. SELECT \* FROM EMPLOYEE WHERE Salary <> NULL;

Query 2. SELECT \* FROM EMPLOYEE WHERE Salary = NULL;

A. Query 1 will give last 4 rows as output (excluding null value)

B. Query 2 will give first row as output (only record containing null value)

C. Query 1 and Query 2 both will give the same result

D. Can’t say

**Solution:** To check for NULL values in the Salary column, the correct query would be: SELECT \* FROM EMPLOYEE WHERE Salary IS NULL.

Query 1 is incorrect because the comparison operator <> is used to check for NULL values, which will not return any rows with NULL values. Therefore, the query will only return rows with non-null salary values.

Query 2 is also incorrect because the comparison operator = is used to check for NULL values, which will not return any rows with NULL values. In SQL, the correct way to check for NULL values is to use the IS NULL operator.

**Q25) What is the difference between TRUNCATE,** DELETE **and DROP? Which of the following statement(s) is/ are correct?**

1. DELETE operation can be rolled back but TRUNCATE and DROP operations cannot be rolled back.

2. DELETE operation cannot be rolled back but TRUNCATE and DROP

operations can be rolled back.

3. DELETE is an example of DML (Data Manipulation Language) but remaining are the examples of DDL (Data Definition Language).

4. All are an example of DDL

Select the correct option:

A. 1 and 3

B. 2 and 3

C. 1 and 4ʼ

D. 2 and 4

E. None of the above

**Solution:**

Options are self-explanatory.

**Q26) Tables A, B have three columns (namely: ‘id’, ‘age’, ‘name’) each. These tables have no ‘null’ values and there are 100 records in each of the table.**

**Here are two queries based on these two tables ‘A’ and ‘B’:**

Query1: SELECT A.id FROM A WHERE A.age > ALL (SELECT B.age FROM B WHERE B.name = 'Ankit')

Query2: SELECT A.id FROM A WHERE A.age > ANY (SELECT B.age FROM B WHERE B.name = 'Ankit')

**Now, which of the following statement is correct for the output of each query?**

A. The number of tuples in the output of Query 1 will be more than or equal to the output of Query 2

B. The number of tuples in the output of Query 1 will be equal to the output of Query 2

C. The number of tuples in the output Query 1 will be less than or equal to the output of Query 2

D. Can’t say

**Solution:** The operators ANY and ALL are used with subqueries that return multiple values. When used with ANY, the condition is considered true if at least one of the subquery values satisfies it. However, when used with ALL, the condition is considered true only if all the subquery values satisfy it. Therefore, option C is correct, as it states that the number of tuples in the output of Query 1 will be less than or equal to the output of Query 2.

**Q27) What is true about relation (table) in different normal forms (1NF, 2NF, 3NF)?**

1. If a relation satisfies the conditions of 1NF. It will automatically satisfy the conditions of 2NF

2. If a relation satisfies the conditions of 2NF. It will automatically satisfy the conditions of 1NF

3. If a relation satisfies the conditions of 3NF. It will automatically satisfy the conditions of 1NF

4. If a relation satisfies the conditions of 2NF. It will automatically satisfy the conditions of 3NF

Select the correct option:

A. 1 and 2

B. 2 and 3

C. 1 and 3

D. 2 and 4

**Solution:** If a relation satisfies a higher normal form, it will also automatically satisfy lower normal forms. For instance, if a relation satisfies the kth normal form (kNF), then it will also satisfy the generalized normal form (gNF) where the degree of generality g is less than or equal to k.

**28) Suppose you want to compare three keys (‘Primary Key’, ‘Super Key’ and ‘Candidate Key’) in a database. Which of the following option(s) is/are correct?**

1. Minimal super key is a candidate key

2. Only one Candidate Key can be Primary Key

3. All super keys can be a candidate key

4. We cannot find “Primary Key” from “Candidate Key”

Select the correct option:

A. 1 and 2

B. 2 and 3

C. 1 and 3

D. 2 and 4

E. 1, 2 and 3

**Solution:**

Minimal super key is a candidate key:

1. correct. A super key is a set of attributes that can uniquely identify each tuple in a relation. A candidate key is a minimal super key, i.e., a super key with the minimum number of attributes. Therefore, a minimal super key is always a candidate key.

Only one Candidate Key can be Primary Key:

1. correct. A primary key is a candidate key that is chosen to uniquely identify tuples in a relation. There can be only one primary key in a relation.

All super keys can be a candidate key:

**Q29) Consider a relation R with the schema R (A, B, C, D, E, F) with a set of functional dependencies F as follows:**

{AB->C, BC->AD, D->E, CF->B}

Which of the following will be the output of DA+?

Note: For any X, X+ is closure of X.

A) DA

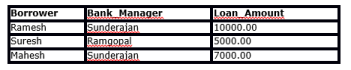
B) DAE

C) ABCD

D) ABCDEF

**Solution:**

**30) Suppose you have a table “Loan\_Records”.**

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SELECT Count(\*) FROM ( (SELECT Borrower, Bank\_Manager FROM Loan\_Records) AS S NATURAL JOIN (SELECT Bank\_Manager, Loan\_Amount FROM Loan\_Records) AS T );

**What is the output of the following SQL query?**

A. 4

B. 5

C. 8

D. 10

**Solution:**  the query selects two columns 'Borrower' and 'Bank\_Manager' from the 'Loan\_Records' table, and then selects two columns 'Bank\_Manager' and 'Loan\_Amount' from the same table. These two subqueries are then joined using NATURAL JOIN keyword, which produces a derived table. Finally, the COUNT(\*) function is applied to the derived table to count the total number of rows in the result.

| BORROWER | BANK\_MANAGER | LOAN\_AMOUNT |
| --- | --- | --- |
| Ramesh | Sunderajan | 10000 |
| Ramesh | Sunderajan | 7000 |
| Suresh | Ramgpal | 5000 |
| Mahesh | Sunderajan | 10000 |
| Mahesh | Sunderajan | 7000 |

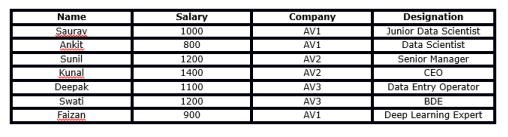
“Sunderjan” appears two times in the Bank\_Manager column, so there will be four entries with Bank\_Manager as “Sunderjan”. So count(\*) will give the 5 output in the outer query.

**Q31) Is “SELECT” operation in SQL equivalent to “PROJECT” operation in relational algebra?**

A. Yes, both are equivalent in all the cases

B. No, both are not equivalent

**Table: AV1**

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**Questions 32-36 are based on the above table.**

**Q32) What will be the output of following query?**

Query 1: Select name from AV1 where name like '%a%'

1. Saurav, Ankit, Kunal, Deepak, Swati, Faizan

2. Saurav, Kunal , Deepak ,Swati , Faizan

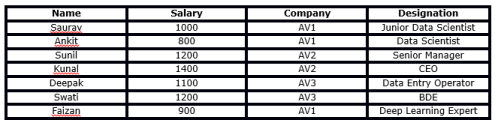
3. Kunal, Deepak ,Swati , Faizan

4. None of above

Ans: 2 and 3?

Solution: The query will search for records in Name, which will have atleast 1 “a” (not “A”).

**Table: AV1**

**Q33) What will be the output for the below query?**

Query: SELECT Name from AV1 where Name LIKE '%\_\_\_\_\_\_%';

**Note: The above operation contains 6 underscores (‘\_’) used with LIKE operator.**

A. It will return names where number of characters in names are greater than or equals to 6

B. It will return names where number of characters in names are greater than 6

C. It will return names where number of characters in names are less than or equals to 6

D. It will give an error

**Solution:** The query will search for records in column ‘Name’ where the number of characters in names is greater than or equal to 6.

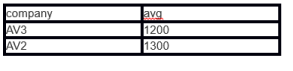
**Q34) What will be the output of the below query?**

Query: SELECT Company, AVG(Salary) FROM AV1 HAVING AVG(Salary) > 1200 GROUP BY Company WHERE Salary > 1000 ;

A. 

B. 

C.



D. None of these

**Solution:** The given SQL query is not valid because the WHERE clause should come before the GROUP BY clause. The correct syntax for the query should be:

SELECT Company, AVG(Salary)

FROM AV1

WHERE Salary > 1000

GROUP BY Company

HAVING AVG(Salary) > 1200;

**Q35) What will be the output for the below Query 1 and Query 2?**

Query 1: SELECT MAX(Salary) FROM AV1 WHERE Salary < (SELECT MAX(Salary) from AV1);

Query 2: WITH S AS (SELECT Salary, ROW\_NUMBER() OVER(ORDER BY Salary DESC) AS RowNum FROM AV1) SELECT Salary FROM S WHERE RowNum = 2;

A. Query 1 output = 1200 and Query 2 output =1200

B. Query 1 output = 1200 and Query 2 output =1400

C. Query 1 output = 1400 and Query 2 output =1200

D. Query 1 output = 1400 and Query 2 output =1400

**Solution:** Both queries will take second highest salary (=1200).

**Q36) Consider the following relational schema.**

Students(rollno: integer, sname: string)

Courses (courseno: integer, cname: string)

Registration (rollno: integer, courseno: integer, percent: real)

**Now, which of the following query would be able to find the unique names of all students having score more than 90% in the courseno 107?**

A. SELECT DISTINCT S.sname FROM Students as S, Registration as R WHERE R.rollno=S.rollno AND R.courseno=107 AND R.percent >90

B. SELECT UNIQUE S.sname FROM Students as S, Registration as R WHERE R.rollno=S.rollno AND R.courseno=107 AND R.percent >90

C. SELECT sname FROM Students as S, Registration as R WHERE R.rollno=S.rollno AND R.courseno=107 AND R.percent >90

D. None of these

**Solution:** Option B have UNIQUE (command doesn’t using in SQL).  
Option C will not take unique names to output.

**Q37) Consider the relation T1 (A, B) in which (A, B) is the primary key and the relation T2 (A, C) where A is the primary key. Assume there are no null values and no foreign keys or integrity constraints.**

**Now, which of the following option is correct related to following queries?** Query 1: select A from T1 where A in (select A from T2)

Query 2: select A from T2 where A in (select A from T1)

A. Both queries will definitely give the same result

B. Both queries may give the same result

C. Both queries will definitely give a different result

D. None of these

**Solution:** For the same values ( values should be unique) for the column A in tables T1 and T2. Query 1 and Query 2 will give the same output.

**Q38) Which of the following option is correct about following queries?** Query 1. SELECT emp.id, department.id FROM emp NATURAL JOIN department Query 2. SELECT emp.id, department.id FROM department NATURAL JOIN emp A. Both queries will give same outputs

B. Both queries will give different output

C. Need table structure

D. None of these

**Solution:** For NATURAL JOIN, the order doesn’t matter.

**Q39) Indexing is useful in a database for fast searching. Generally, B-tree is used for indexing in a database. Now, you want to use Binary Search Tree instead of B-tree.**

**Suppose there are numbers between 1 and 100 and you want to search the number 35 using Binary Search Tree algorithm. Which of the following sequences CANNOT be the sequence for the numbers examined?**

A. 10, 75, 64, 43, 60, 57, 55

B. 90, 12, 68, 34, 62, 45, 55

C. 9, 85, 47, 68, 43, 57, 55

D. 79, 14, 72, 56, 16, 53, 55

**Solution:**

**Q40) If an index scan is replaced by sequential scan in SQL, then what will happen?**

**Note: Number of observations is equal to 1 million.**

A. Execution will be faster

B. Execution will be slower

C. Execution will not be affected

D. None of these

**Solution:** Sequential scan is slower, than index scan. An index scan allows the database to quickly locate specific rows based on the values in an indexed column, whereas a sequential scan reads all rows in a table in a specific order. When the table contains a large number of rows, a sequential scan may be slower than an index scan because it requires reading every row in the table.

**Q41) Suppose you have a csv file which has 3 columns (‘User\_ID’, ‘Gender’, ‘Product\_ID’) and 7,150,884 rows. You have created a table “train” from this file in SQL.**

**Now, you run Query 1 as given below and get the following output:** Query 1: EXPLAIN select \* from train where Product\_ID = 'P00370853'; **OUTPUT:**

QUERY PLAN

-------------------------------------------------------------- Seq Scan on train (cost=0.00..79723.88 rows=16428 width=68) Filter: ((product\_id)::text = 'P00370853'::text)

(2 rows)

You have now created Product\_ID column as an index in train table using the below SQL query:

CREATE INDEX product\_ID ON train(Product\_ID)

And, you run Query 2 (same as Query 1) on “train” and get the following output. Query 2: EXPLAIN select \* from train where Product\_ID = 'P00370853'; **OUTPUT:**

QUERY PLAN

------------------------------------------------------------------------------ -

Bitmap Heap Scan on train (cost=829.53..40738.85 rows=35754 width=68) Recheck Cond: ((product\_id)::text = 'P00370853'::text)

-> Bitmap Index Scan on product\_id (cost=0.00..820.59 rows=35754 width=0) Index Cond: ((product\_id)::text = 'P00370853'::text)

(4 rows)

**Which query will take less time to execute?**

A. Query 1

B. Query 2

C. Both queries will take the same time

D. Can’t say

**Solution:** Query1 – execution time is 79723.88 (in output);

Query2 – time is 40738.85.

**Q42) Suppose you have a CSV file which has 3 columns (‘User\_ID’, ‘Gender’, ‘product\_ID’) and 7150884 rows. You have created a table “train” from this file in SQL.**

Now, you run Query 1 (mentioned below):

Query1: EXPLAIN SELECT \* from train WHERE product\_ID like '%7085%';

Then, you created product\_ID columns as an index in ‘train’ table using below SQL query:

CREATE INDEX product\_ID ON train(Product\_ID)

Suppose, you run Query 2 (same as Query 1) on train table.

Query 2: EXPLAIN SELECT \* from train WHERE product\_ID like '%7085%';

Let T1 and T2 be time taken by Query 1 and Query 2 respectively. Which query will take less time to execute?

A. T1>T2

B. T2>T1

C. T1~T2

D. Can’t say

Solution: LIKE command check record, don’t id. Adding product\_ID doesn’t help for the query.

**Q43) Suppose you have a table ‘Employee’. In Employee table, you have a column named Salary. Now, you applied Query1 on Employee table.**

Query 1: SELECT \* FROM Employee where Salary\*100 > 5000;

After that, you created an index on Salary columns and then you re-run the Query 2 (same as Query 1).

Query 2: SELECT \* FROM Employee where Salary\*100 > 5000;

Here, Query 1 is taking T1 time and Query 2 is taking T2 time.

**Which of the following is true for the queries time?**

A. T1 > T2

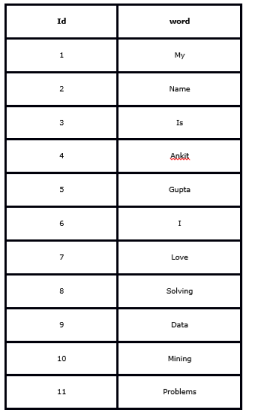
B. T2 > T1

C. T1 ~ T2

D. Can’t say

**Solution:** Second query will be faster on account of index search.

**Q44) Suppose you are given a table ‘words’. The table has 2 columns ‘id’ and ‘word’.**

****

**What will be the output for the below query?**

Query: select c1, c2, c3 from ( select id, lag(word) over (order by id) as c1, word as c2, lead(word) over (order by id) as c3 from words ) as t where c2 = ‘Mining’ or c2 = ‘Problems’;

A. B. Error

C.

D. None of these

**Solution:**In query is repeat of word from behind column into the next.

1)Retrieving data from the "words" table and sorting it by the "id" column.

2)Applying the LAG and LEAD window functions to retrieve the previous and next words for each word in the "word" column.

3)Filtering the results to include only rows where "c2" is equal to 'Mining' or 'Problems'.

4)Retrieving columns "c1", "c2", and "c3" from the filtered results.

**Q45) What is true for ‘View’ in SQL?**

1. It can help in providing security

2. It can be used for hiding complexity

3. If there are more than one table involved in the view, we cannot perform (Data Manipulation Language) DML queries

4. When you drop the base table. View becomes inactive.

Select the correct option:

A. 1 and 3

B. 2 and 4

C. 1, 3 and 4

D. All of these

**Solution:** A view in SQL is a virtual table that is based on the result of a SELECT statement. The view is not a physical table and does not store data on its own, but instead retrieves data from one or more tables. When a view is created, it depends on the underlying base table(s) and any changes made to the base table(s) can affect the view.

**Q46) Suppose I created a table called ‘avian’ using below SQL query:** Query : CREATE TABLE avian ( emp\_id SERIAL PRIMARY KEY, name varchar); **Now, I want to insert some records in the table avian:**

Query1: INSERT INTO avian (name) VALUES(‘FRAZY');

Query2: INSERT INTO avian (name) VALUES(‘ANKIT');

Query3: INSERT INTO avian (name) VALUES('SUNIL');

Query4: INSERT INTO avian (name) VALUES('SAURAV');

**Which of the following will be the output of the below query?** Query: Select \* FROM avian;

A.

B.

C. Error

D. None of these

**Solution:** Since we used the SERIAL data type for the 'emp\_id' column during the creation of the 'avian' table, it automatically increments the value of 'emp\_id' for each record that is inserted into the table. .