UNIT – V

Multiple Choice Questions

(Questions for Applications)

1. Analyze the use of Create statement

   A. **describe the layout of a table**
   B. extract rows from a table
   C. modify the contents of a table
   D. delete rows in a table

2. Can you tell which of the following in SQL are used to sort the rows?

   A. select statement
   B. avg function
   C. **order by clause**
   D. group by clause

3. Can you tell which of the following built-in SQL function counts the number of rows satisfying the where clause?

   A. Min
   B. Max
   C. Avg
   D. **Count**

4. Identify the SQL statement is used to make changes to the existing data

   A. **update**
   B. alter
   C. append
   D. drop

5. Identify the SQL command to extract a vertical subset of in a relation

   A. select
   B. **project**
   C. join
   D. insert

6. What is the acronym for DDL

   A. **Data definition language**
   B. Data description language
   C. Data descriptive language
   D. Definition data language

7. Can you tell me, on executing DELETE command, if you get an error "foreign key constraint"-what does it imply?

   A. Foreign key not defined
   B. Table is empty
   C. Connectivity issue
   D. **Data is present in the other table**

8. Identify the command that contains a set of SQL statements for operating on data

  A. DDL
  B.**DML**
  C. DCL
  D. TCL

9. Can you tell the acronym of SQL

  A. Simple query language
  B. Simple querying language
  C. Structured Query Language
  D. Structured querying language

10. Which operator in SQL is used to join two or more conditions and displays a row that satisfies all the conditions?

  A. And operator
  B. Or operator
  C. Not operator
  D. Equal Operator

11. Can you tell how much storage space does DATETIME data type in MySQL require?

  A. 4 bytes
  B. 2 bytes
  C. 8 bytes
  D. 1 byte

12. What is the maximum length of the char columns in MySQL is

  A. 255 bytes
  B. 65, 535 bytes
  C. 256 bytes
  D. None of the mentioned

13. What is the default format for "Date" data type in MySQL?

  A. YYYY-MM-DD
  B. MM-YYYY-DD
  C. DD-MM-YYYY
  D. DD-MON-YYYY

(Questions for skills)

14. Can you tell, what will be the output of a query given below?

  SELECT person_id, Fname, lname FROM person;

  A. Show only columns (person_id, Fname, lname) and rows related to these columns
  B. Show only columns (person_id, Fname, lname)
  C. Show all rows
  D. Show all columns except (person_id, Fname, lname)

15. Identify the clause is used to determine "which column to include in the query sets"?

  A. SELECT
  B. FROM

C. WHERE
D. ORDER BY

16. Identify the clause is used to "Filters out unwanted data"?

    A. FROM
    B. <u>WHERE</u>
    C. SELECT
    D. ORDER BY

17. Can you tell, which of the following command is used to "Modify the existing field of the table"?

    A. <u>ALTER</u>
    B. FROM
    C. SELECT
    D. MODIFY

18. Can you tell, which among the following is not a "query clause"?

    A. <u>WHERE</u>
    B. MODIFY
    C. ALTER
    D. FROM

19. Identify the command used to execute the structured query language

    A. DCL
    B.**<u>DDL</u>**
    C. DML
    D. None of the mentioned

20. Do you know, which among the following tags belong to Data definition language?

    A. SELECT
    B. FROM
    C. WHERE
    D. <u>All of the mentioned</u>

21. Do you know, which among the following tags belong to Data Manipulation language?

    A. <u>UPDATE</u>
    B. ALTER
    C. MODIFY
    D. All of the mentioned

22. Can you tell, which are the two languages used in Mysql?

    A. <u>DML/DDL</u>
    B. DDL/DCL
    C. DML/DDM
    D. None of the mentioned

23. Identify the keyword used for sorting the data in descending order in Mysql?

    A. <u>DESC</u>
    B. ASC

C. ALTER
D. MODIFY

24. Can you tell which among the following operators is/are belongs to "Equality conditions"?

A. <>
B. !=
C. =
D. >/<

25. Can you tell which clause is used to "filter out unwanted Groups"?

A.**HAVING**
B.FROM
C.WHERE
D. SELECT

Long Questions (4 marks)

(Questions for Applications)

1. Can you explain CREATE statement in MySQL with example?

The CREATE TABLE statement is used to create a new table in the database. Tables are defined in part by the columns they contain. Each column has a specific data type which specifies how data is stored in the column. When creating a new table, you must decide on the appropriate data type of the column. These data types are then specified in the CREATE TABLE Statement.

Syntax:

a. The general format of CREATE command is

CREATE TABLE tablename (column1 data type(size),
column2 data type(size),
column3 data type(size),
.
.
.
 column-n data type(size)
);

b. We can create a table from another table in SQL.
 The syntax is as follows

CREATE TABLE<new table> (<column 1>, <column 2>)
AS SELECT <column 1>, <column 2> FROM <existing table>;

a. Create a table called student that contains roll number, name and marks in three subjects mysql>
use jahnavi; Database changed
mysql> create table student
-> (rollnoint(2),
 -> name varchar(15),
-> m1 int(2),
 -> m2 int(2),
 -> m3 int(2)
);
 Query OK, 0 rows affected (0.14 sec)

2. Can you explain ALTER statement in MySQL with example?

The structure of a table can be modified by using the ALTER TABLE command. ALTER TABLE allows the user to change the structure of the existing table

- Add or delete the columns
- Create or destroy indexes
- Change the data type of existing columns
- Rename columns or table itself

ALTER TABLE works by making a temporary copy of the original table.

Syntax:

a. Adding new columns
   ALTER TABLE <table name>
   ADD(<new column><data type>(size),
                   :
   <new column><data type>(size));

b. Modifying existing columns
   ALTER TABLE <table name>
   MODIFY(<column><new datatype>(new-size));

Example:

a. Add a new column Total with data type number and size
2. mysql> alter table student
 ->add (total number (2)
);
 Query OK, 3 rows affected (0.17 sec)
Records: 3 Duplicates: 0 Warnings: 0

mysql> select * from student;
```
+..........+.........+.......+.......+.......+............+
| rollno | name | m1 | m2 | m3 |   total  |
+..........+.........+......+.......+.......+.........+
|  1    | Rama | 89 | 70 |  75  NULL |
|  2    | Bheem| 80 | 70 | 65 | NULL |
|  3    | Shyam | 60 | 57 | 55| NULL |
+.......+..........+......+......+....-+...........+
```
3 rows in set (0.00 sec)

3. Can you explain UPDATE statement in MySQL with example?

The UPDATE command is used to change or modify data values in a table. The UPDATE verb in MYSQL is used to either update all the rows or selected rows in a table. The UPDATE statement updates columns in the existing table's rows with new values. The WHERE clause, if given, specifies which rows should be updated. Otherwise all the rows are updated.

Syntax:

a. UPDATE <Table name>
SET <column1>=<expression>,

.
.
<column n>=<expression>;

b. UPDATE<Table name>
SET <column1>=<expression>,
.
.
<column n>=<expression>;
WHERE<condition>;

Example:

 a. Increment the marks of all students by 10 in subject2
mysql> update student set m2=m2+10;
Query OK, 3 rows affected (0.03 sec)
 Rows matched: 3 Changed: 3 Warnings: 0

b. Update the total of all the students
mysql> update student
 -> set total=m1+m2+m3;
Query OK, 3 rows affected (0.03 sec)
Rows matched: 3 Changed: 3 Warnings: 0

mysql> select * from student;
+--------+--------+------+------+------+--------+
| rollno |name| m1 | m2 | m3 | total |
+--------+--------+------+------+------+--------+
1	Rama	89	70	75	234
2	Bheem	80	70	65	215
3	Shyam	60	57	55	172
+--------+--------+------+------+--------+--------+
3 rows in set (0.00 sec)

4. Can you explain DELETE statement in MySQL with example?

The DELETE command is used to delete rows from a table that satisfies the condition and returns the number of records that were deleted. If the DELETE command is executed without a WHERE clause then, all rows are deleted.

Syntax:

a. DELETE FROM<table name> WHERE<condition>;
b. DELETE FROM<table name>;

Example:

a. Remove the all details of student named Raja.
mysql> delete from student where name='Raja';
query ok. 1 row affected.

b.Delete all records.
mysql> delete from student;
query ok. 3 row affected.

5. Can you distinguish between GROUP BY and ORDER BY clause with examples?

The GROUP BY clause tells Oracle to group rows based on distinct values that exists from specified columns. The group by clause creates a data set containing several sets of records grouped together based on a condition.

Syntax:

SELECT <column 1><column 2>……<column n>,
AGGREGATE FUNCTION (Expression)
FROM table name WHERE <condition>
GROUP BY <column 1><column 2>……<column n>;
HAVING <aggregate condition>;

Example:

a. Display the number of students in each course.
mysql> select course, count(*) "Numberof Students" from studentgroup by course;
 COURSE Number of Students

 ----
bca 2
bbm 2
mca 2
Query OK, 3 rows affected

b. Display the maximum total from each course mysql> select course, max(total) from student group by course;

COURSE   MAX(TOTAL)

----
bca 235
bbm   210
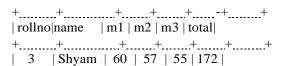mca 165
Query OK, 3 rows affected

The **ORDER BY** clause is used in a SELECT statement to sort results either in ascending or descending order. Oracle sorts query results in ascending order by default.

Syntax:

 SELECT column-list
 FROM table_name [WHERE condition]
 [ORDER BY column1 [, column2, ..columnN] [DESC]];

Example:

a. Display the student details in ascending order of marks. mysql> select * from student order by total;

+..........+..............+.......+........+......-+.........+
| rollno|name | m1 | m2 | m3 | total|
+..........+..............+.......+........+.......+.........+
| 3 | Shyam | 60 | 57 | 55 | 172 |

```
|  2   | Bheem | 80 | 70 | 65 |215 |
|  1   | Rama  | 89 | 70 | 75 |234 |
 +........+..........+......+......+.....+.....+.......+
3 rows in set (0.00 sec)
```

b. Display the student names and marks in subject 1 in descending order mysql> select name,m1 from student order by m1 desc;

```
+..........+......+
| name | m1 |
+..........+......+
| Rama  | 89 |
| Bheem| 80 |
| Shyam | 60 |
+..........+......+
 3 rows in set (0.00 sec)
```

6. What do you think is a correlated sub query? Give example.

A correlated subquery is one where a subquery references a column from a table in the parent query. A correlated subquery is evaluated once for each row of the parent statement, which can be any of the SELECT, UPDATE or DELETE.

Example:

Consider the information in the following tables.
MYSQL> select * from employ;

EMPNO	ENAME	SAL	DEPTNO
E001	Raja	6000	D002
E002	Rani	7000	D00
E003	Jaya	5000	D002
E004	Ranbir	8000	D002
E005	Rajni	4000	D002
E006	Sita	5500	D002

MYSQL> select * from depart;

DNO	DNAME	LOC
D001	accounts	Chennai
D002	research	Mumbai
D003	HRD	bangalore
D004	EDP	hyderabad
D005	Inventory	Goa

4 rows affected

a. Display the names of employees who are working in Chennai
MYSQL> select ename from employ
 -> where deptno in (select dno from depart where loc='chennai');

ENAME

 Rani
 Ranbir
2 rows affected

b. Display the location where Sita is working
MYSQL> select loc from depart
2 where dno=(select deptno from employ where ename='Sita');

LOC

 Bangalore

7. What do you see as the use of pattern matching using % and _ in the LIKE clause?

The LIKE operator is used to list all rows in a table whose column values match a specified pattern. It is useful when you want to search rows to match a specific pattern, or when you do not know the entire value.

Example:

a. List the names of students whose name begins with 'S'.
mysql> select name from student where name like 'S%'

NAME

Sriram
Sita
Shyam
3 rows in set (0.00 sec)

b. List the name and roll number of students whose name ends with 'a'.
mysql> select rollno,name from student where name like '%a';
ROLLNO   NAME
-------------- ---------------
   14   Gita
   16   Sita
2 rows in set (0.00 sec)

c. List the names of students who have 'i' as the second letter in their name.
mysql> select name from student where name like '_i%';
 NAME

 Gita
 Sita
2 rows in set (0.00 sec)

d. List the course whose name ends with the letter 'm'.
mysql>select course from student where course like '%m'

COURSE
----
bbm
bbm
2 rows in set (0.00 sec)

8. Find any four data types that a table in MYSQL can hold?

TYPE	SIZE	DESCRIPTION
CHAR[Length]	Length bytes	A fixed-length field from 0 to 255 characters long.
VARCHAR(Length)	String length + 1 bytes	A fixed-length field from 0 to 255 characters long.
INT[Length]	4 bytes	Range of -2,147,483,648 to 2,147,483,647 or 0 to 4,294,967,295 unsigned.
FLOAT	4 bytes	A small number with a floating decimal point
DOUBLE[Length , Decimals]	8 bytes	A large number with a floating decimal point

9. **Debate on various forms of SELECT statement in MYSQL with example**?

The SELECT command is used to retrieve rows from one or more table.

Syntax:

a. To select all rows and all columns SELECT * FROM <table name>;
b. To retrieve selected columns and all rows SELECT column1, column2 FROM<table name>;
c. To retrieve selected columns and all rows SELECT column1, column2 FROM
d. <table name >WHERE<condition>;
e. To retrieve selected columns and selected rows SELECT column1, column2 FROM<table name>WHERE <condition>;

Example:

a. Display the details of all the students

mysql> select * from student;

```
+--------+---------+-----+-----+-----+
| rollno | name    | m1  | m2  | m3  |
+--------+---------+-----+-----+-----+
|   1    | Rama    | 89  | 70  | 75  |
|   2    | Bheem   | 80  | 70  | 65  |
|   3    | Shyam   | 60  | 57  | 55  |
+--------+---------+-----+-----+-----+
3 rows in set (0.00 sec)
```

b. Display the roll number and names of all the students

mysql> select rollno,name from student;

```
+--------+---------+
| rollno | name    |
+--------+---------+
|   1    | Rama    |
|   2    | Bheem   |
|   3    | Shyam   |
```

```
+.........+............+
```
3 rows in set (0.00 sec)

c. Display the details of students who got more than 75 in subject 1

mysql> select * from student -> where m1>75;

```
+.........+............+........+......+......+......+
| rollno |  name  | m1 | m2 | m3 |
+.........+............+-......+......+......+......+
|   1   |Rama  |  89 | 70 |  75 |
|   2   |Bheem |  80 | 70 |  65 |
+.........+............+......+......+......+......+
```
2 rows in set (0.01 sec)

10. **Find any four aggregate functions in MYSQL**?

An aggregate function performs a calculation on multiple values and returns a single value.

1) COUNT

- The COUNT function returns the total number of values in the specified field.
- Returns the number of rows in a table.
- It works on both numeric and non-numeric data types.

2) SUM

- SUM function which returns the sum of all the values in the specified column.

3) AVG

- Returns the average of the values in a column.

4) MIN

- Returns the minimum value in a given column.

5) MAX

- Returns the maximum value in a given column.

Examples:

AVG – Returns the average of the values in a column
E.g. Display the average total of all the students
mysql> select avg(total) as "Average" from student;

Average

171.666667

MAX – Returns the maximum value in a given column
E.g. Display the maximum total from student table
mysql> select max(total) as "Maximum Total" from student;

Maximum Total

      235

MIN – Returns the minimum value in a given column

E.g. Display the minimum total from student table
mysql> select min(total) as "Minimum Total" from student;

Minimum Total

        100

COUNT – Returns the number of rows in a table
E.g. Display the number of students in student table mysql> select count(*) from student;
COUNT(*)

        6

 SUM – Returns the sum of values in a given column
E.g. Display the sum total of marks in subject1 from student table
mysql> select sum(m1) as "Marks in Subject1" from student;
Marks in Subject1

        295

11. Debate on range searching and pattern matching predicates with examples?

In order to select data that is within a range of values, the BETWEEN operator is used. The BETWEEN operator allows the selection of rows that contain values within a specified lower and upper limit. The two values in between the range must be linked with a keyword AND. The BETWEEN operator can be used with both character and numeric data types.

Example:

A . List the details of students whose total is in the range 180 and 250. mysql> select * from student where total between 180 and 250

ROLLNO	NAME	M1	M2	M3	TOTAL	COURSE
12	Sriram	70	90	75	235	bca
17	Shyam	80	60	70	210	bbm

2 rows in set (0.00 sec)

Pattern Matching
LIKE Operator : The LIKE operator is used to list all rows in a table whose column values match a specified pattern. It is useful when you want to search rows to match a specific pattern, or when you do not know the entire value. For this purpose we use a the following wildcard character• % allows to match any string of any length
• _ allows to match on a single character.

Example:

a. List the names of students whose name begins with 'S'.
mysql> select name from student where name like 'S%'
            NAME

            Sriram
        Sita
        Shyam
        3 rows in set (0.00 sec)

b. List the name and roll number of students whose name ends with 'a'.
mysql> select rollno,name from student where name like '%a';

```
ROLLNO    NAME
   14        Gita
   16        Sita
2 rows in set (0.00 sec)
```

c. List the names of students who have 'i' as the second letter in their name.
mysql> select name from student where name like '_i%';
```
     NAME
-----------------------
     Gita
     Sita
```

12. Find any four built in string functions in MYSQL withexamples.

Function Name	Return Value	Examples
LOWER (string_value)	All the letters in 'string_value' is converted to lowercase.	mysql> select lower('Srinivas'); LOWER ('S srinivas
UPPER (string_value)	All the letters in 'string_value' is converted to uppercase.	mysql> select upper('Srinivas'); UPPER ('S SRINIVAS
LTRIM (string_value, trim_text)	All occurrences of 'trim_text' is removed from the left of 'string_value'.	mysql> select ltrim('nivas','ni'); LTR vas
RTRIM (string_value, trim_text)	All occurrences of 'trim_text' is removed from the right of 'string_value'.	MYSQL>select rtrim('srinivas','nivas'); RTRI sri

13. Find any four built in numeric functions in MYSQL withexamples.

Function Name	Return Value	Examples
ABS (x)	Absolute value of the number 'x'	mysql> select abs (-26); ABS (-26) 26
CEIL (x)	Integer value that is Greater than or equal to the number 'x'	mysql> select ceil (34.6);CEIL (34.6) 35
FLOOR (x)	Integer value that is Less than or equal to the number 'x'	mysql> select floor (34.6);FLOOR (34.6) 34
TRUNC (x, y)	Truncates value of number 'x' up to 'y' decimal places	mysql> select trunc(38.546,2) ; TRUNC (38.546,2) 38.54

14. Debate on the purpose of GRANT command with anexample.

The grant statement provides various types of access to database objects.

Syntax:

GRANT<privileges> ON <object name> TO <user name>;

Privileges:

It can be any of the following values:

Privilege	Description
SELECT	Ability to perform SELECT statements on the table.
INSERT	Ability to perform INSERT statements on the table.
UPDATE	Ability to perform UPDATE statements on the table.
DELETE	Ability to perform DELETE statements on the table.
INDEX	Ability to create an index on an existing table.
CREATE	Ability to perform CREATE TABLE statements.
ALTER	Ability to perform ALTER TABLE statements to change the table definition.
DROP	Ability to perform DROP TABLE statements.
GRANT OPTION	Allows you to grant the privileges that you possess to other users.
ALL	Grants all permissions except GRANT OPTION.

Object:

The name of the database objects that you are granting permissions for. In the case of granting privileges on a table, this would be the table name.

User:

The name of the user that will be granted these privileges.

Example:

Granting EXECUTE privileges on a function in MySQL.: If there is a function named "CalculateSalary" and you want to grant EXECUTE access to the user named Amit, then the following GRANT statement should be executed.

GRANT EXECUTE ON FUNCTION Calculatesalary TO 'Amit'@localhost';

15. Debate on sub query with an example.

A subquery is a form of MYSQL statement that appears inside another MYSQL statement. It is also called a nested query. The statement containing the subquery is called parent query. The parent statement uses the result set returned by the subquery. It can be used for,

- Inserting records in the target table
- Create and insert records in a table
- Update records in targettable
- To provide values for conditions in the WHERE, HAVING, IN clause used with SELECT, UPDATE and DELETEcommands.

The concept of using a subquery in the FROM clause of the SELECT statement is called

inline view.

Example:

Consider the information in the following tables.

MYSQL> select * from employ;

EMPNO	ENAME	SAL	DEPTNO
E001	Raja	6000	D002
E002	Rani	7000	D001
E003	Jaya	5000	D003
E004	Ranbir	8000	D001
E005	Rajni	4000	D004
E006	Sita	5500	D003

6 rows affected.

MYSQL> select * from depart;

DNO	DNAME	LOC
D001	accounts	Chennai
D002	research	Mumbai
D003	HRD	bangalore
D004	EDP	hyderabad
D005	Inventory	Goa

4 rows affected

a. Display the names of employees who are working in Chennai.
    MYSQL> select ename fromemploy
-> where deptno in (select dno from depart where loc='chennai');

ENAME

Rani
Ranbir
2 rows affected