MySQL

Write SQL Queries for the following:

Question 1:

Create a Database named Institute

Query:

```
CREATE DATABASE if not exists INSTITUTE;
```

Output:

```
+--------------------+
| Database           |
+--------------------+
| company            |
| information_schema |
| institute          |
| mysql              |
| performance_schema |
| sys                |
| test               |
| world              |
+--------------------+
```

Question 2:

Create a table named FACULTY with the following structure.

Table FACULTY

ATTRIBUTE	DATATYPE	CONSTRAINT
F_ID	Integer	PRIMARY KEY
Fname	Text data with max length 25 characters	NOT NULL
Lname	Text data with max length 25 characters	NOT NULL and UNIQUE
HIRE_DATE	DATE	
SALARY	DECIMAL SIZE 7,2	Must be >= 5000

Query:

```
CREATE TABLE if not exists FACULTY (
 F_ID int not null primary key,
 Fname VARCHAR(25) not null,
 Lname VARCHAR(25) not null unique,
 HIRE_DATE DATE,
SALARY DECIMAL(7,2) CHECK (SALARY>=500));
```

Output:

```
Query OK, 0 rows affected (0.04 sec)
```

Question 3:

Create a table named COURSES with the following structure.

Table : COURSES

ATTRIBUTE	DATATYPE	CONSTRAINT
C_ID	Text(10)	PRIMARY KEY
F_ID	Integer	Foreign Key
CNAME	TEXT SIZE 40 CHARS	DEFAULT VALUE “BASIC COURSE”
FEES	DECIMAL SIZE 7,2	

Query:

```
CREATE TABLE if not exists COURSES (
C_ID VARCHAR(10) PRIMARY KEY,
F_ID INT,
CNAME VARCHAR(40) DEFAULT 'BASIC COURSE',
FEES DECIMAL(7,2),
CONSTRAINT fk_faculty
FOREIGN KEY (F_ID)
REFERENCES FACULTY (F_ID)
ON UPDATE CASCADE
ON DELETE CASCADE);
```

Output:

```
Query OK, 0 rows affected (0.04 sec)
```

Question 4:

Insert following data records into FACULTY table and COURSES table.

Table : FACULTY

F_ID	Fname	Lname	Hire_Date	Salary
102	AMIT	MISHRA	12-10-1998	12000
103	NITIN	VYAS	24-12-1994	8000
104	RAKSHIT	SONI	18-5-2001	14000
105	RASHMI	MALHOTRA	11-9-2004	11000
106	SULEKHA	SRIVASTAVA	5-6-2006	10000
107	NIRANJAN	KUMAR	26-8-1996	16000

Table : COURSES

C_ID	F_ID	Cname	Fees
C21	102	Grid Computing	40000
C22	106	System Design	16000
C23	104	Computer Security	8000
C24	106	Human Biology	15000
C25	102	Computer Network	20000
C26	105	Visual Basic	6000
C27	107	Dreamweaver	4000

Query 1:

```
INSERT INTO FACULTY (F_ID, Fname, Lname, Hire_Date,
Salary)
VALUES
(102, 'AMIT', 'MISHRA', '1998-10-12', 12000),
(103, 'NITIN', 'VYAS', '1994-12-24', 8000),
(104, 'RAKSHIT', 'SONI', '2001-05-18', 14000),
```

```
(105, 'RASHMI', 'MALHOTRA', '2004-09-11', 11000),
(106, 'SULEKHA', 'SRIVASTAVA', '2006-06-05',10000),
(107, 'NIRANJAN', 'KUMAR', '1996-08-26', 16000);
```

Output 1:

```
+------+---------+-----------+-----------+--------
--+
| F_ID | Fname   | Lname     | HIRE_DATE | SALARY
|
+------+---------+-----------+-----------+--------
--+
|  102 | AMIT    | MISHRA    | 1998-10-12 |
12000.00 |
|  103 | NITIN   | VYAS      | 1994-12-24 |
8000.00 |
|  104 | RAKSHIT | SONI      | 2001-05-18 |
14000.00 |
|  105 | RASHMI  | MALHOTRA  | 2004-09-11 |
11000.00 |
|  106 | SULEKHA | SRIVASTAVA | 2006-06-05 |
10000.00 |
|  107 | NIRANJAN | KUMAR    | 1996-08-26 |
16000.00 |
+------+---------+-----------+-----------+--------
--+
```

Query 2:

```
INSERT INTO COURSES (C_ID, F_ID, Cname, Fees)
VALUES
    ('C21', 102, 'Grid Computing', 40000),
    ('C22', 106, 'System Design', 16000),
    ('C23', 104, 'Computer Security', 8000),
    ('C24', 106, 'Human Biology', 15000),
    ('C25', 102, 'Computer Network', 20000),
    ('C26', 105, 'Visual Basic', 6000),
    ('C27', 107, 'Dreamweaver', 4000);
```

Output 2:

C_ID	F_ID	Cname	Fees
C21	102	Grid Computing	40000
C22	106	System Design	16000
C23	104	Computer Security	8000
C24	106	Human Biology	15000
C25	102	Computer Network	20000
C26	105	Visual Basic	6000
C27	107	Dreamweaver	4000

Question 5:

To display all records from FACULTY table

Query:

```
SELECT * FROM FACULTY;
```

Output:

F_ID	Fname	Lname	HIRE_DATE	SALARY
102	AMIT	MISHRA	1998-10-12	12000.00
103	NITIN	VYAS	1994-12-24	8000.00
104	RAKSHIT	SONI	2001-05-18	14000.00
105	RASHMI	MALHOTRA	2004-09-11	11000.00
106	SULEKHA	SRIVASTAVA	2006-06-05	10000.00
107	NIRANJAN	KUMAR	1996-08-26	16000.00

Question 6:

To display all records from COURSES table

Query:

```
SELECT * FROM COURSES;
```

Output:

C_ID	F_ID	Cname	Fees
C21	102	Grid Computing	40000
C22	106	System Design	16000
C23	104	Computer Security	8000
C24	106	Human Biology	15000
C25	102	Computer Network	20000
C26	105	Visual Basic	6000
C27	107	Dreamweaver	4000

Question 7:

To display all records from FACULTY table whose Hire date is more than 05-OCT-2001

Query:

```
SELECT * FROM FACULTY WHERE Hire_Date > '2001-10-05';
```

Output:

```
+------+---------+-----------+-----------+----------+
| F_ID | Fname   | Lname     | HIRE_DATE | SALARY   |
+------+---------+-----------+-----------+----------+
|  105 | RASHMI  | MALHOTRA  | 2004-09-11 | 11000.00 |
|  106 | SULEKHA | SRIVASTAVA | 2006-06-05 | 10000.00 |
+------+---------+-----------+-----------+----------+
```

Question 8:

To display F_ID, Fname, Cname of those faculties who charged more than15000 as fees.

Query:

```
SELECT FACULTY.F_ID, FACULTY.Fname,
COURSES.Cname
FROM FACULTY
JOIN COURSES ON FACULTY.F_ID = COURSES.F_ID
WHERE COURSES.Fees > 15000;
```

Output:

```
+------+---------+------------------+
| F_ID | Fname   | Cname            |
+------+---------+------------------+
|  102 | AMIT    | Grid Computing   |
|  106 | SULEKHA | System Design    |
|  102 | AMIT    | Computer Network |
+------+---------+------------------+
```

Question 9:

Display faculty id and the count of number of courses handled by each faculty from courses table

Query:

```
SELECT F_ID, COUNT(*) AS CourseCount
FROM COURSES
GROUP BY F_ID;
```

Output:

```
+------+-------------+
| F_ID | CourseCount |
+------+-------------+
|  102 |           2 |
|  104 |           1 |
|  105 |           1 |
|  106 |           2 |
|  107 |           1 |
+------+-------------+
```

Question 10:

Display all records FACULTY table order by First Name of the faculty in descending order

Query:

```
SELECT * FROM FACULTY ORDER BY Fname DESC;
```

Output:

F_ID	Fname	Lname	HIRE_DATE	SALARY
106	SULEKHA	SRIVASTAVA	2006-06-05	10000.00
105	RASHMI	MALHOTRA	2004-09-11	11000.00
104	RAKSHIT	SONI	2001-05-18	14000.00
103	NITIN	VYAS	1994-12-24	8000.00
107	NIRANJAN	KUMAR	1996-08-26	16000.00
102	AMIT	MISHRA	1998-10-12	12000.00

Question 11:

Display Faculty id,faculty name,Salary and course name from faculty and courses table

Query:

```
SELECT FACULTY.F_ID, FACULTY.Fname,
FACULTY.Salary, COURSES.Cname
FROM FACULTY
JOIN COURSES ON FACULTY.F_ID = COURSES.F_ID;
```

Output:

F_ID	Fname	Salary	Cname
102	AMIT	12000.00	Grid Computing
106	SULEKHA	10000.00	System Design
104	RAKSHIT	14000.00	Computer Security
106	SULEKHA	10000.00	Human Biology
102	AMIT	12000.00	Computer Network
105	RASHMI	11000.00	Visual Basic
107	NIRANJAN	16000.00	Dreamweaver

Question 12:

To increase the fees of Dreamweaver course by 500.

Query:

```
UPDATE COURSES SET Fees = Fees + 500 WHERE
Cname = 'Dreamweaver';
```

Output:

```
 Query OK, 1 row affected (0.05 sec)
Rows matched: 1  Changed: 1  Warnings: 0
 +------+------+------------------+-------+
 | C_ID | F_ID | Cname            | Fees  |
 +------+------+------------------+-------+
 | C21  |  102 | Grid Computing   | 40000 |
 | C22  |  106 | System Design    | 16000 |
 | C23  |  104 | Computer Security |  8000 |
 | C24  |  106 | Human Biology    | 15000 |
 | C25  |  102 | Computer Network | 20000 |
 | C26  |  105 | Visual Basic     |  6000 |
 | C27  |  107 | Dreamweaver      |  4500 |
 +------+------+------------------+-------+
```

Question 13:

Alter COURSES table to change size of CNAME field to varchar(50)

Query:

```
ALTER TABLE COURSES MODIFY COLUMN Cname VARCHAR(50);
```

Output:

```
 Query OK, 7 rows affected (0.17 sec)
Records: 7  Duplicates: 0  Warnings: 0
 +-------+-------------+------+-----+---------+-------+
 | Field | Type        | Null | Key | Default | Extra |
 +-------+-------------+------+-----+---------+-------+
 | C_ID  | varchar(10) | NO   | PRI | NULL    |       |
 | F_ID  | int         | YES  | MUL | NULL    |       |
 | Cname | varchar(50) | YES  |     | NULL    |       |
 | Fees  | int         | YES  |     | NULL    |       |
 +-------+-------------+------+-----+---------+-------+
```

Question 14:

Alter FACULTY table to add a new field to Phone Number varchar(15)

Query:

```
ALTER TABLE FACULTY ADD COLUMN Phone_Number VARCHAR(15);
```

Output:

```
 Query OK, 0 rows affected (0.07 sec)
Records: 0  Duplicates: 0  Warnings: 0
 +------+---------+-----------+-----------+---------+-------------
 +
 | F_ID | Fname    | Lname      | HIRE_DATE  | SALARY   | Phone_Number
 |
 +------+---------+-----------+-----------+---------+-------------
 +
 |  102 | AMIT     | MISHRA     | 1998-10-12 | 12000.00 | NULL
 |
 |  103 | NITIN    | VYAS       | 1994-12-24 |  8000.00 | NULL
 |
 |  104 | RAKSHIT  | SONI       | 2001-05-18 | 14000.00 | NULL
 |
 |  105 | RASHMI   | MALHOTRA   | 2004-09-11 | 11000.00 | NULL
 |
 |  106 | SULEKHA  | SRIVASTAVA | 2006-06-05 | 10000.00 | NULL
 |
 |  107 | NIRANJAN | KUMAR      | 1996-08-26 | 16000.00 | NULL
 |
+------+---------+-----------+-----------+---------+-------------+
```

Question 15:

Display distinct F_ID from COURSES table.

Query:

```
SELECT DISTINCT F_ID FROM COURSES;
```

Output:

```
 +------+
 | F_ID |
 +------+
 |  102 |
 |  104 |
 |  105 |
 |  106 |
 |  107 |
 +------+
```

Question 16:

Display records from FACULTY table where Last name starts with ‘M’

Query:

```
SELECT * FROM FACULTY WHERE Lname LIKE 'M%';
```

Output:

```
+------+--------+----------+-----------+----------+--------------+
| F_ID | Fname  | Lname    | HIRE_DATE  | SALARY   | Phone_Number |
+------+--------+----------+-----------+----------+--------------+
|  105 | RASHMI | MALHOTRA | 2004-09-11 | 11000.00 | NULL         |
|  102 | AMIT   | MISHRA   | 1998-10-12 | 12000.00 | NULL         |
+------+--------+----------+-----------+----------+--------------+
```

Question 17:

Display today’s date

Query:

```
SELECT CURDATE();
```

Output:

```
+------------+
| CURDATE()  |
+------------+
| 2023-05-29 |
+------------+
```

Question 18:

Display total and average fees from COURSES table.

Query:

```
SELECT SUM(Fees) AS TotalFees, AVG(Fees) AS AverageFees FROM COURSES;
```

Output:

```
+-----------+-------------+
| TotalFees | AverageFees |
+-----------+-------------+
|    109500 |  15642.8571 |
+-----------+-------------+
```

Question 19:

Display Faculty ID who handle/teach more than one Course

Query:

```
SELECT F_ID FROM COURSES GROUP BY F_ID HAVING COUNT(*) > 1;
```

Output:

```
+------+
| F_ID |
+------+
|  102 |
|  106 |
+------+
```

Question 20:

Display all records from FACULTY table whose phone number is NULL

Query:

```
SELECT * FROM FACULTY WHERE Phone_Number IS NULL;
```

Output:

F_ID	Fname	Lname	HIRE_DATE	SALARY	Phone_Number
102	AMIT	MISHRA	1998-10-12	12000.00	NULL
103	NITIN	VYAS	1994-12-24	8000.00	NULL
104	RAKSHIT	SONI	2001-05-18	14000.00	NULL
105	RASHMI	MALHOTRA	2004-09-11	11000.00	NULL
106	SULEKHA	SRIVASTAVA	2006-06-05	10000.00	NULL
107	NIRANJAN	KUMAR	1996-08-26	16000.00	NULL

Question 21:

Show the structure of FACULTY table and COURSES table

Query 1:

```
DESCRIBE FACULTY;
```

Output 1:

```
+-------------+-------------+------+-----+---------+-------+
| Field       | Type        | Null | Key | Default | Extra |
+-------------+-------------+------+-----+---------+-------+
| F_ID        | int         | NO   | PRI | NULL    |       |
| Fname       | varchar(25) | NO   |     | NULL    |       |
| Lname       | varchar(25) | NO   | UNI | NULL    |       |
| HIRE_DATE   | date        | YES  |     | NULL    |       |
| SALARY      | decimal(7,2)| YES  |     | NULL    |       |
| Phone_Number| varchar(15) | YES  |     | NULL    |       |
+-------------+-------------+------+-----+---------+-------+
```

Query 2:

```
DESCRIBE COURSES;
```

Output 2:

```
+-------+------------+------+-----+---------+-------+
| Field | Type       | Null | Key | Default | Extra |
+-------+------------+------+-----+---------+-------+
| C_ID  | varchar(10)| NO   | PRI | NULL    |       |
| F_ID  | int        | YES  | MUL | NULL    |       |
| Cname | varchar(50)| YES  |     | NULL    |       |
| Fees  | int        | YES  |     | NULL    |       |
+-------+------------+------+-----+---------+-------+
```

Question 22:

Delete records from COURSES table having F_ID as 102

Query:

```
DELETE FROM COURSES WHERE F_ID = 102;
```

Output:

```
Query OK, 2 rows affected (0.03 sec)
```

Question 23:

Delete all records from COURSES table

Query:

```
DELETE FROM COURSES;
```

Output:

```
Query OK, 5 rows affected (0.01 sec)
```

Question 24:

Revoke the last delete operation

Query:

```
ROLLBACK;
```

Output:

```
Query OK, 0 rows affected (0.00 sec)
```

Question 25:

Drop COURSES table.

Query:

```
DROP TABLE COURSES;
```

Output:

```
Query OK, 0 rows affected (0.20 sec)
```

Question 26:

Write the outputs of the SQL queries (a) to (d) and write the SQL queries (e) to (h) based on the relations SCHOOL and ADMIN given below:

Table:SCHOOL

CODE	TEACHERNAME	SUBJECT	DOJ	PERIODS	EXPERIENCE
1001	UMA SHANKAR	ENGLISH	12/03/2000	24	10
1009	NANDITA RAI	PHYSICS	03/09/1998	26	12
1203	LISA ANAND	ENGLISH	09/04/2000	27	5
1045	YASHRAJ	MATHS	24/08/2000	24	15
1123	JEEVAN	PHYSICS	16/07/1999	28	4
1167	HARISH B	CHEMISTRY	19/10/1999	27	5
1215	RAMESH	PHYSICS	11/05/1998	22	16

Table:ADMIN

CODE	GENDER	DESIGNATION
1001	MALE	VICE PRINCIPAL
1009	FEMALE	COORDINATOR
1203	FEMALE	COORDINATOR
1045	MALE	HOD
1123	MALE	SENIOR TEACHER
1167	MALE	SENIOR TEACHER
1215	MALE	HOD

a)
```
SELECT TEACHERNAME,PERIODS FROM SCHOOL
  WHERE PERIODS < 25 ORDER BY
  TEACHERNAME;
```

b) SELECT TEACHERNAME, ADMIN.CODE, GENDER FROM SCHOOL, ADMIN WHERE SCHOOL.CODE = ADMIN.CODE AND GENDER LIKE 'FEMALE';

c) SELECT TEACHERNAME,DESIGNATION FROM SCHOOL, ADMIN WHERE SCHOOL.CODE = ADMIN .CODE AND SUBJECT LIKE 'ENGLISH';

d) Select subject,min(periods) from school group by subject having min(periods)>24;

e) Display Code,Teachers name , Designation and experience from school table and admin table whose experience is more than 10 years

f) Add the details of a new teacher in school table . Details are as follows (1011,VEENA, COMPUTER SCIENCE,12/07/2000,25)

g) To remove the details of all HODs from the ADMIN table

h) Increase the number periods by 2 for all the teachers handling PHYSICS

Solutions:

a)

TEACHERNAME	PERIODS
RAMESH	22
UMA SHANKAR	24
YASHRAJ	24

b)

TEACHERNAME	CODE	GENDER
NANDITA RAI	1009	FEMALE
LISA ANAND	1203	FEMALE

c)

TEACHERNAME	DESIGNATION
UMA SHANKAR	VICE PRINCIPAL
LISA ANAND	COORDINATOR

d)

subject	min(periods)
CHEMISTRY	27

e)

```
SELECT s.CODE, s.TEACHERNAME, a.DESIGNATION,
s.EXPERIENCE

FROM SCHOOL s

JOIN ADMIN a ON s.CODE = a.CODE
```

```
WHERE s.EXPERIENCE > 10;f)

f)

INSERT INTO SCHOOL (CODE, TEACHERNAME, SUBJECT, DOJ,
PERIODS, EXPERIENCE)

VALUES (1011, 'VEENA', 'COMPUTER SCIENCE', '2000-07-
12', 25, 0);

g) DELETE FROM ADMIN WHERE DESIGNATION = 'HOD';

h)UPDATE SCHOOL SET PERIODS = PERIODS + 2 WHERE
SUBJECT = 'PHYSICS';
```