DATA BASE MANAGEMENT SYSTEM

REVISION OF DATABASE CONCEPTS AND SQL COMMANDS COVERED IN CLASS XI

	DATA MODELS : is an abstract model that organizes elements of data and standardizes how they relate to one another. Different Types of models are: Relational data model Network data model Hierarchical data model Object oriented model
	RDBMS: RELATIONAL DATA BASE MANAGEMENT SYSTEM : For example : MySQL, Oracle, Ms-Access
	SQL: Structured Query Language is a universal language to interact with a wide variety of RDBMS
	Keys: **Primary Key:** A column or group of column, which uniquely identify a tuple in a table. A primary key cannot have NULL values. A table can have only one primary key. A combination of columns can also act as primary key. **Candidate key:** All columns or group of columns that can act as primary key. **Alternate Key:** All candidate keys other than primary key . **Foreign Key:** a non-key attribute which helps to establish a relation with another table. It is generally primary key of other table.
	Degree : Total number of columns in a table **Cardinality: Total number of rows in a table**

SQL COMMANDS

DATA DEFINITION LANGUAGE

CREATE DATABASE<DATABASENAME>;	To create a database in the system
SHOW DATABASES;	To view the names of all databases in the system
USE<DATABASENAME>;	To open a particular database
DROP DATABASE<DATABASENAME>;	To remove a database from the system
DESCRIBE TABLE<TABLENAME>;	To view the structure of a table
SHOW TABLES;	To view the names of tables in current database
CREATE TABLE<Tablename> (attributename1 datatype(size) constraint, attributename2 datatype(size) constraint, . .);	To create a new table in the current database: For example : CREATE TABLE EMP (EMPID INT PRIMARY KEY, ENAME CHAR(30) NOT NULL, POST VARCHAR(15));
ALTER TABLE	To modify the structure of a table
ALTER TABLE<TABLE NAME> ADD ATTRIBUTENAME DATATYPE(SIZE);	For adding attributes
ALTER TABLE<TABLENAME>DROP <ATTRIBUTENAME>;	For deleting attribute
ALTER TABLE<TABLENAME>MODIFY	For changing datatype, size etc. of an attribute
DROP TABLE<TABLENAME>	To remove a table from the databse

DML: DATA MANIPULATION LANGUAGE

INSERT INTO <TABLENAME> VALUES (VAL1,VAL2…);	To add new record/row/tuple/ in the table
DELETE FROM <TABLENAME> WHERE<CONDITION>;	to remove tuples from a table
UPDATE <TABLENAME> SET<ATTRIBUTENAME>=NEWVALUE WHERE <CONDITION>;	To modify or change the data in the table
SELECT <ATTRIBUTE LIST> FROM <TABLENAME> WHERE <CONDITION>;	To view / extract rows from a table

MYSQL : MATH FUNCTIONS

POW(X,Y) - x raise to the power of y	Select Pow(8,2); → 64
MOD(X,Y) - Remainder of X/Y	Select MOD(30/12) → 6
ROUND(N,D) - Rounds number N upto given D no. of digits	Select Round(2123.7898,2); → 2123.79
SQRT(X) – Returns square root of X	Select SQRT(100): → 10

MYSQL : STRING FUNCTIONS

LENGTH(STR) : **Find Number of characters in given string.**	Select LENGTH('SPACE') → 5
CONCAT(STR1,STR2,STR3….) : **Joins the given strings one after the other.**	Select CONCAT('Wel', 'come'); → 'Welcome'
UPPER(STR)/UCASE(STR): **Converts lower case alphabets of given string alphabets to Upper case. Other charters remain as it is.**	Select UPPER('Kendriya') → 'KENDRIYA' Select UPPER('orange') → 'ORANGE'
LOWER(STR)/LCASE(STR) : **Converts Upper case alphabets of given string alphabets to lower case. Other charters remain as it is.**	Select LOWER('Kendriya') → 'kendriya' Select LOWER('ORANGE') → 'orange'
LTRIM(STR): **Removes Spaces on left side of given string.**	Select LTRIM(' I am learning '); → 'I am learning '
RTRIM(STR) : **Removes Spaces on Right side of given string**	Select RTRIM(' I am back '); → ' I am back'
TRIM(STR) : **Removes both leading (left) and Trailing (right) Spaces from given string.**	Select TRIM(' ROSE IS RED ') → 'ROSE IS RED '
LEFT(STR,N) : **extract N characters from left side of given String**	Select LEFT('GREAT WORK',4) → 'GREA'
RIGHT(STR,N) : **extract N characters from right side of given String**	Select RIGHT('PYTHON',4) → 'THON'
INSTR(STR,SUBTRING) : **returns the position of the first occurrence of a string in another string.**	Select INSTR("apple", "p"); →2
SUBSTR(STR, position, no. of characters) or MID(STR, position, no. of characters)	Select MID('Kendriya',4,2) → 'dr'

MYSQL : DATE FUNCTIONS

CURDATE(): **Display current date in YYYYMM-DD format**	Select CURDATE ();
DATE(DateTime) : **returns the date part of date time value specified**	Select Date('2013-12-23'); →2013-12-23
DAYOFMONTH(DATE): **returns the day of the month for a given date (a number from 1 to 31)**	SELECT DAYOFMONTH('2021-03-04'); → 04
DAYNAME(DATE) : **returns the Day Name corresponding to Date value supplied.**	Select DAYNAME('2021-03-04'); → Thursday
DAYOFWEEK(DATE): **Returns the weekday index for a given date (a number from 1 to 7). 1=Sunday, 2=Monday AND so on**	Select dayofweek('2021-03-04'); →5
MONTH(DATE): **returns the month part for a given date (a number from 1 to 12)**	Select month('2013-12-23') → 12
MONTHNAME(DATE) : **returns the name of the month for a given date.**	Select MONTHNAME('2013-12-23') → December
YEAR(DATE): **returns the year part for a given date.**	Select YEAR('2013-12-23'); → 2013
NOW(): **returns the current date and time, as "YYYY-MM-DD HH-MM-SS" (string)**	Select Now();

AGGREGATE FUNCTIONS

SUM()	total sum of a numeric column
COUNT()	COUNT() function returns the number of rows that matches a specified criterion. **Count doesn't count Null Values**
AVG()	average value of a numeric column
MAX	Maximum value of a column (Numeric/ Varchar/ Date)
MIN()	Minimum value of a column (Numeric/ Varchar/ Date)

JOINS: WORKING WITH MORE THAN ONE TABLES

Cartesian Product **SELECT * FROM TABLE1,TABLE2;**	formed by Horizontal joining each row of the first table with every other row of the second table. i.e. table 1 has N rows and table 2 has M rows, Cartesian Product as N X M rows. - CROSS JOIN / CARTESIAN PRODUCT
EQUI JOIN **SELECT * FROM TABLE1,TABLE2 WHERE TABLE1.COMMON COLUMN=TABLE2.COMMON COLUMN;**	Join condition is based on equality of values in common column Both common columns are retained in result table
NON-EQUI JOIN **SELECT * FROM TABLE1,TABLE2 WHERE TABLE1.COMMON COLUMN>TABLE2.COMMON COLUMN;**	Join condition is based on non equal values in common columns
NATURAL JOIN **SELECT * FROM TABLE 1 NATURAL JOIN TABLE2;**	Join condition is based on equality of values in common column One of the common column is retained in result table

EXAMPLES:

EXAMPLE 1. CONSIDER THE FOLLOWING TABLE:

EMPL

EMPNO	ENAME	JOB	SAL	DEPTNO
8270	JACK	SALESMAN	2985	10
8566	ALI	CLERK	9870	20
8922	AJAY	NULL	8760	30
8736	BINDU	CLERK	5643	20
8822	JOY	MANAGER	3000	10

DIFFERENCE BETWEEN COUNT(*) AND COUNT(COLUMN NAME)	
COUNT(*)	**COUNT(COLUMN NAME)**
Returns the count of all rows in the table	**Returns the count of non-null values in the given column name**
SELECT COUNT(*) FROM EMPL; **ANS :** **COUNT(*)**: **5**	**SELECT COUNT(JOB) FROM EMPL;** **ANS :** **COUNT(JOB)**: **4**

EXAMPLE 2. Mr. Roy is a manager in a hotel and wants to find out some data from a table, where he maintains the hotel records. He is not very expert with SQL commands and functions. Help him to write the queries.
Table: Hotel

ROOMID	CNAME	ROOMTYPE	DTOFARRIVAL	CHARGES
R1	RITESH	AC	2016-09-09	1800
R2	SUMAN	DELUXE	2020-08-01	2000
R3	ABHI	GENERAL	1995-04-05	3000
R4	RAM	AC	1994-02-02	2500

(i) Display count of the different room types from the table Hotel.
(ii) Display the average room charges of “AC” rooms.

Answer:
(i) SELECT COUNT(DISTINCT RoomType) From Hotel;
(ii) SELECT AVG(Charges) FROM Hotel WHERE RoomType=“AC”;

EXAMPLE 3. Consider the following table Games. Write SQL commands for the following statements.
Table:Games

GCode	GameName	Type	Number	PrizeMoney	ScheduleDate
101	Carom Board	Indoor	2	5000	23/01/2004
102	Badminton	Outdoor	2	12000	12/12/2003
103	Table Tennis	Indoor	4	8000	14/02/2004

105	Chess	Indoor	2	9000	01/01/2004
108	Lawn Tennis	Outdoor	4	25000	19/03/2004

(i) To display the details of those Games, which are having PrizeMoney more than 7000.
(ii) To display sum of PrizeMoney for each Type of Games.
(iii) To display the total number of games available in the above table Games

Answer:
(i) SELECT*FROM Games WHERE PrizeMoney > 7000;
(ii) SELECT SUM(PrizeMoney), Type FROM Games GROUP BY Type;
(iii) SELECT COUNT(GameName) FROM Games;

EXAMPLE 4 Consider the table given below and answer the questions

Table :EMP

EMPNO	ENAME	SEX	DOB	DOJ	DEPTCODE
101	RAM	M	1990-05-02	2012-01-02	D01
102	AMAN	M	1992-03-01	2013-02-04	D03
103	DIYA	F	1989-01-04	2011-01-06	D04
106	SANDEEP	M	1993-04-06	2015-01-03	D02
107	VARUN	M	1995-07-08	2014-02-04	D05
104	PRIYANKA	F	1995-02-01	2012-02-07	D01

(i) To display EMPNO, ENAME, SEX from the table EMP in descending order of EMPNO
(ii) To display the records of all female employee from the table EMP.
(iii) To display the EMPNO and ENAME of those employees from the table EMP who are joined between ’2011-01-01’ and ‘2013-01-01’.
(iv) To count the number of male employees who have bom before ‘1994-01-01’.

Answer:
(i) SELECT EMPNO, ENAME, SEX FROM EMP ORDER BY EMPNO DESC;
(ii) SELECT * FROM EMP WHERE SEX = ' F' ;
(iii) SELECT EMPNO, ENAME FROM EMP WHERE DOJ BETWEEN '2011-01-01' AND '2013-01-01';
(iv) SELECT COUNT(EMPNO) FROM EMP WHERE SEX= 'M' AND DOJ < '1994-01-01';

EXAMPLE 5 Write the uses of following MySQL functions with one example of each.
(i) MID
(ii) LEFT()
(iii) TRIM()
(iv) LCASE()
(v) MAX()

(i) MID() This function returns a substring of the specified length starting from the specified position.
e.g. SELECT MID('HELLO ', 3); -> LLO

(ii) LEFT() This function returns the left most number of characters as specified. e.g. SELECT LEFT (' HELLO ', 1); ->H

(iii) TRIM() It removes any extra spaces from right and left of a string but not from the middle,

e.g. SELECT TRIM (' Zebra crossing '); ->Zebra crossing

(iv) LCASE() This function converts the characters of an argument string to the lowercase characters.

e.g. SELECT LCASE ("Vowel"); -> vowel

(v) MAX() This function returns the largest value from the selected columns.

Syntax SELECT MAX(column_name) FROM table_name;
e.g. Write a query to display the maximum pay availed by the coaches.
mysql> SELECT MAX (Pay) FROM Club;

Worksheets

MCQ

1	Which type of values will be returned by SQL while executing the following statement? Select length("LENGTH") ; (A) Numeric value (B) Text value (C) Null value (D) Float value
2	If column "salary" contains the data set (45000, 5000, 55000, 45000, 55000), what will be the output after the execution of the given query? SELECT AVG (DISTINCT salary) FROM employee; (A) 38500 (B) 40000 (C) 41000 (D) 35000
3	The correct SQL from below to find the temperature in increasing order of all cities. (A) SELECT city FROM weather order by temperature ; (B) SELECT city, temperature FROM weather ; (C) SELECT city, temperature FROM weather ORDER BY temperature ; (D) SELECT city, temperature FROM weather ORDER BY city ;
4	Which one of the following is not an aggregate function? (A) Min (B) Sum (C) With (D) Avg
5	Where and Having clauses can be used interchangeably in SELECT queries? (A) True (B) False (C) Only in views (D) With order by
6	If column "per" contains the data set (97.5, 56.2, 75.6, 56.2, 75.6), what will be the output after the execution of the given query? SELECT AVG(DISTINCT per) FROM student; (a) 76.43 (b) 76.34 (C) 67.43 (d) 67.34
7	Which clause is used with "aggregate functions"? (a) GROUP BY (b) SELECT (c) WHERE (d) Both (a) and (b)
8	Which SQL statement do we use to find out the total number of records present in the table SALES? (a) SELECT * FROM SALES; (b) SELECT COUNT (*) FROM SALES; (c) SELECT FIND (*) FROM SALES; (d) SELECT SUM () FROM SALES;
9	Which one of the following functions is used to find the smallest value from the given data in MySQL? (a) MINIMUM( ) (b) MIN( ) (c) SHORT( ) (d) SMALL( )
10	Write output of the following MySQL command – SELECT SUBSTRING("Informatics Practices",6,9); (a) matics Pr (b) atics Pra (c) matics Pra (d) None
11	Which SQL statement is used to display all the data from product table in the decreasing order of price? A .SELECT * FROM PRODUCT; B. SELECT * FROM PRODUCT ORDER BY PRICE; C. SELECT * FROM PRODUCT ORDER BY PRICE DESC;

	D. SELECT * FROM PRODUCT ORDER BY DESC;
12	If column “City” contains the data set (DELHI, HYDERABAD, KOLKATA, CHENNAI, KOLKATA), what will be the output after the execution of the given query? SELECT COUNT(DISTINCT City) FROM Customer; A. 4 B. 5 C 3 D. 2
13	In SQL, which function returns the weekday name for a given date. i. DAY ii. DAYNAME iii. NAME iv. DNAME
14	Write the output of the following SQL command: Select truncate(15.88,1); i. 15.88 ii. 15.8 iii. 15.9 iv. 16
15	Which one of the following is not an aggregate function? i. MAX() ii. SUMUP() iii. COUNT() iv. MIN()
16	Which one of the following functions is used to find the HIGHEST value from the given data in MySQL? i. MAX() ii. MAXIMUM() iii. BIG() iv. HIGHEST()
17	Which type of values will not considered by SQL while executing the following statement? SELECT COUNT(column name) FROM INVENTORY; a) Numeric value b) Text value c) Null value d) Date value
18	If column “Margin “contains the data set(2.00,2.00,NULL,4.00,NULL,3.00,3.00) what will be the output of after the execution of the given query? SELECT AVG(Margin) FROM SHOP; a) 2.9 b) 2.8 c)2.00 d) None of these
19	Predict the output of the following query: SELECT MOD (9,0); i. 0 ii. NULL iii. NaN iv. 9
20	Which of the following SQL functions does not belong to the Math functions category? i. POWER() ii. ROUND() iii. LENGTH() iv. MOD()
21	Raj, a Database Administrator, needs to display the average pay of workers from those departments which have more than five employees. He is experiencing a problem while running the following query: SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*) > 5 GROUP BY DEPT; Which of the following is a correct query to perform the given task? A. SELECT DEPT, AVG(SAL) FROM EMP WHERE COUNT(*) > 5 GROUP BY DEPT; B. SELECT DEPT, AVG(SAL) FROM EMP HAVING COUNT(*) > 5 GROUP BY DEPT; C. SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT WHERE COUNT(*) > 5; D. SELECT DEPT, AVG(SAL) FROM EMP GROUP BY DEPT HAVING COUNT(*) > 5;
22	Predict the output of the following query: SELECT LCASE (MONTHNAME ('2023-03-05')); i. May ii. March iii. may iv. March
23	Which of the following SQL queries is used to retrieve rows from the "customers" table where the "email" column contains NULL values? a. SELECT * FROM customers WHERE email = NULL; b. SELECT * FROM customers WHERE email IS NOT NULL;

	c. SELECT * FROM customers WHERE ISNULL(email); d. SELECT * FROM customers WHERE email IS NULL;
24	You have a table called "employees" with columns "department" and "salary." You want to find the highest salary in each department and display the results in descending order of salary. Which SQL clauses should you use for this query? a. GROUP BY, HAVING, ORDER BY b. GROUP BY, ORDER BY c. HAVING, ORDER BY d. HAVING, GROUP BY
25	Predict the output of the following query: SELECT ROUND(15.789, 2); a. 15.79 b. 15.789 c. 16 d. 15.8
26	Predict the output of the following query: SELECT ROUND(543.5694,-1); a. 544 b. 543 c. 540 d. Error
27	Predict the output of the following query: SELECT INSTR("UNICODE","CO"); a. 3 b. 4 c.5 d. None of these
28	Predict the output of the following query: SELECT MID("Informatics",3,4); a. form b.orma c.formatics d.ormatics
29	Predict the output of the following query: SELECT POW(3,4); a. 64 b.81 c.12 d.7
30	Primary key cannot have _____ values. a. duplicate b. null c. both a and b d. none of these
31	Select _____ from instructor where dept name= 'Comp. Sci.'; Which of the following should be used to find the mean of the salary ? A. Mean(salary) B. Avg(salary) C. Sum(salary) D. Count(salary)
32	An aggregate function performs a calculation on _____ and returns a single value. (A) single value (B) multiple values (C) no value (D) None of the above
33	All aggregate functions except _____ ignore null values in their input collection. A. Count(attribute) B. Count(*) C. Avg D. Sum
34	Predict the output of the following query: SELECT MOD (ROUND (13·9, 0), 3); A. 4 B. 1 C. 2 D. 0
35	Predict the output of the following query: SELECT UPPER (MID ("start up india", 10)); A.INDIA B.india

	C. India D.start up in
36	Assertion & Reasoning Mark the correct choice as a. Both A and R are true and R is the correct explanation for A b. Both A and R are true and R is not the correct explanation for A c. A is True but R is False d. A is false but R is True Assertion(A) : The ORDER BY clause sorts the result set in descending order by default. Reason(R): To sort a result set in ascending order, we can use ASC keyword with ORDER BY clause.
37	What is the meaning of GROUP BY clause in MySql ? a) Group data by column values b) Group data by row values. c) Group data by row and column values. d) None of these
38	By default, ORDER BY clause lists the results in _____ order. a) Descending b) Any c) Same d) Ascending
39	The wild card characters used in Like clause are ____ for single character and ___ for any number of characters. a. *, % b. _ , % c. %,_ d. %,*
40	Find odd one out? a) GROUP BY b) DESC c) ASC d) ORDER BY

ANSWERS TO MCQs

Q.NO	ANS	Q.NO	ANS	Q.NO	ANS		
1	**A**	**11**	**C**	**21**	**D**	**31**	**B**
2	**D**	**12**	**A**	**22**	**D**	**32**	**B**
3	**D**	**13**	**B**	**23**	**D**	**33**	**A**
4	**C**	**14**	**B**	**24**	**A**	**34**	**C**
5	**B**	**15**	**B**	**25**	**A**	**35**	**A**
6	**A**	**16**	**A**	**26**	**C**	**36**	**D**
7	**D**	**17**	**C**	**27**	**D**	**37**	**A**
8	**B**	**18**	**B**	**28**	**A**	**38**	**D**
9	**B**	**19**	**B**	**29**	**B**	**39**	**B**
10	**A**	**20**	**C**	**30**	**C**	**40**	**A**

ASSERTION AND REASONING QUESTIONS

	Given below are two statements, one labelled as Assertion (A) and the other labelled as Reason (R) **a)Both (A) and (R) are correct, but (R) is the correct reason of (A).** **b)Both (A) and (R) are correct and (R) is not the correct reason of (A).** **c)(A) is correct, (R) is incorrect.** **d)(A) is incorrect, (R) is correct.**
1	**Assertion. A primary key is used to uniquely identify the rows in a data table.** **Reason. A primary key is a field or attribute which has a unique value for each row or tuple.**
2	**Assertion. A data table can have only one primary key.** **Reason. In a data table, there can be only one attribute/field containing unique values for each row.**
3	**Assertion. Data redundancy may lead to many problems.** **Reason. In RDBMS, data redundancy is 100% removed.**
4	**Assertion. A primary key is used to uniquely identify the rows in a data table.** **Reason. A primary key is a field or attribute which has a unique value for each row or tuple.**
5	**Assertion. There can be multiple options for choosing a primary key in a data table.** **Reason. All attribute combinations inside a data table that contain unique values for each row, are the candidate keys.**
6	**Assertion: In SQL, aggregate function avg() calculates the average value on a set of values and produces a single result.** **Reason: The aggregate functions are used to perform some fundamental arithmetic tasks such as min(), max(), sum()**
7	Assertion(A): A database constraint can be added or removed any time from database tables. Reasoning(R): Alter table command is used to change the structure of table.
8	Assertion(A): SQL has efficient mechanisms to retrieve data stored in multiple tables in a MySQL database. Reasoning(R): The SQL statements CREATE is used to retrieve data from the tables in a database and is also called query statement.

ANSWERS:

QNO	ANS	QNO	ANS
1	**A**	**5**	**A**
2	**C**	**6**	**B**
3	**C**	**7**	**B**
4	**A**	**8**	**C**

TWO MARKS QUESTIONS

1	Neelam, a database administrator needs to display Class wise total number of students of 'XI' and 'XII' house. She is encountering an error while executing the following query: SELECT CLASS, COUNT (*) FROM STUDENT ORDER BY CLASS HAVING CLASS='XI' OR CLASS= 'XII'; Help her in identifying the reason of the error and write the correct query by suggesting the possible correction (s).
2	What is the purpose of GROUP BY clause in SQL? Explain with the help of suitable example
3	Mr. Vinay wanted to display average salary of each Category. He encountered an error while entered the following SQL query. Identify error(s) and Rewrite the correct SQL statement. SELECT Category, Salary FROM Hotel GROUP BY Category;
4	Distinguish between Single Row and Aggregate functions of MySQL. Write one example of each.
5	Rohini writes the following commands with respect to a table Student having fields, SNo, Name, Age, Fee. Command1: Select count (*) from student; Command2: Select count (Fee) from student; she gets the output as 5 for the first command but gets an output 4 for the second command. Explain the reason for different output with justification
6	Gopi Krishna is using a table Employee .it has the following Columns: Code,Name,Salary,Deptcode SELECT Deptcode,MAX(Salary) FROM Employee; He wants to display maximum salary department wise. But he did not get the desired result .Rewrite the above query with necessary change to help him get the desired result.
7	How are NULL values treated by aggregate functions?
8	What is the purpose of Order By clause in SQL? Explain with the help of suitable example
9	Rashmi, a database administrator needs to display house wise total number of records of 'Red' and 'Yellow' house. She is encountering an error while executing the following query: SELECT HOUSE, COUNT (*) FROM STUDENT GROUP BY HOUSE WHERE HOUSE='RED' OR HOUSE= 'YELLOW'; Help her in identifying the reason of the error and write the correct query by suggesting the possible correction (s).
10	Difference between Primary key and candidate key.
11	Give any two differences between the POWER( ) and SUM( ) SQL functions.
12	Find the output (i and ii) for the following SQL commands : **Table: F_INDIA** F_ID | Product | Price | Qty F01 | Sun Cream | 678 | 10 F02 | Beauty Cream | 5400 | 15 F03 | Face Glow Foundation | 1704 | 20 F04 | Gel Wax | 520 | 10 F05 | Hair Shampoo | 800 | 25 F06 | Beauty Cream 1200 | 32 | (i) SELECT COUNT (Distinct product) FROM F_INDIA; (ii) SELECT Product, Price FROM F_INDIA WHERE Product LIKE '%m';

<table>
<tr><td>13</td><td>Write the names of SQL functions to perform the following operations :
a. Display name of the Month from your date of birth.
b. Convert email-id to lowercase.
c. Count the number of characters in your name</td></tr>
<tr><td>14</td><td>Naina wants to group the result set based on some column's value. Also, she wants that the grouped result should appear in a sorted order . In which order will she write the two clauses (for sorting and for grouping). Give example to support your answer.</td></tr>
<tr><td>15</td><td>What is the difference between a WHERE clause and a HAVING clause of SQL statement ?</td></tr>
<tr><td>16</td><td>What is the difference between order by and group by clause when used along with the SELECT statement?</td></tr>
<tr><td>17</td><td>Write the output of the queries (a) to (d) based on the table, TECH_COURSE given below:
Table: TECH_COURSE
<table>
<tr><th>CID</th><th>CNAME</th><th>FEES</th><th>STARTDATE</th><th>TID</th></tr>
<tr><td>C201</td><td>Animation and VFX</td><td>12000</td><td>2022-07-02</td><td>101</td></tr>
<tr><td>C202</td><td>CADD</td><td>15000</td><td>2021-11-15</td><td>NULL</td></tr>
<tr><td>C203</td><td>DCA</td><td>10000</td><td>20220-10-01</td><td>102</td></tr>
<tr><td>C204</td><td>DDTP</td><td>9000</td><td>2021-09-15</td><td>104</td></tr>
<tr><td>C205</td><td>Mobile Application Development</td><td>18000</td><td>2022-11-01</td><td>101</td></tr>
<tr><td>C206</td><td>Digital Marketing</td><td>16000</td><td>2022-07-25</td><td>103</td></tr>
</table>
A. SELECT DISTINCT TID FROM TECH_COURSE;
B. SELECT TID, COUNT(*), MIN(FEES) FROM TECH_COURSE GROUP BY TID HAVING COUNT(TID)>1;
C. SELECT CNAME FROM TECH_COURSE WHERE FEES>15000 ORDER BY CNAME;
D. SELECT AVG(FEES) FROM TECH_COURSE WHERE FEES BETWEEN 15000 AND 17000;</td></tr>
<tr><td>18</td><td>Write the outputs of the SQL queries (A) to (D) based on the relations Teacher and Placement given below:
Table: Teacher
<table>
<tr><th>T_ID</th><th>Name</th><th>Age</th><th>Department</th><th>Date_of_join</th><th>Salary</th><th>Gender</th></tr>
<tr><td>1</td><td>Arunan</td><td>34</td><td>Computer Sc</td><td>2019-01-10</td><td>12000</td><td>M</td></tr>
<tr><td>2</td><td>Saman</td><td>31</td><td>History</td><td>2017-03-24</td><td>20000</td><td>F</td></tr>
<tr><td>3</td><td>Randeep</td><td>32</td><td>Mathematics</td><td>2020-12-12</td><td>30000</td><td>M</td></tr>
<tr><td>4</td><td>Samira</td><td>35</td><td>History</td><td>2018-07-01</td><td>40000</td><td>F</td></tr>
<tr><td>5</td><td>Raman</td><td>42</td><td>Mathematics</td><td>2021-09-05</td><td>25000</td><td>M</td></tr>
<tr><td>6</td><td>Shyam</td><td>50</td><td>History</td><td>2019-06-27</td><td>30000</td><td>M</td></tr>
<tr><td>7</td><td>Shiv</td><td>44</td><td>Computer Sc</td><td>2019-02-25</td><td>21000</td><td>M</td></tr>
<tr><td>8</td><td>Shalakha</td><td>33</td><td>Mathematics</td><td>2018-07-31</td><td>20000</td><td>F</td></tr>
</table>
Table : Placement
<table>
<tr><th>P_ID</th><th>Department</th><th>Place</th></tr>
<tr><td>1</td><td>History</td><td>Ahmedabad</td></tr>
<tr><td>2</td><td>Mathematics</td><td>Jaipur</td></tr>
<tr><td>3</td><td>Computer Sc</td><td>Nagpur</td></tr>
</table>
A.SELECT Department, avg(salary) FROM Teacher GROUP BY Department;
B.SELECT MAX(Date_of_Join), MIN(Date_of_Join) FROM Teacher;
C.SELECT Name, Salary, T.Department, Place FROM Teacher T, Placement P WHERE T.Department = P.Department AND Salary>20000;
D.SELECT Name, Place FROM Teacher T, Placement P WHERE Gender =‟F‟ AND T.Department=P.Department;</td></tr>
</table>

ANSWERS

<table>
<tr><td>1</td><td>She should use group by clause instead of order by
The correct query is :
SELECT CLASS, COUNT (*) FROM STUDENT
GROUP BY CLASS HAVING CLASS='XI' OR CLASS= 'XII';</td></tr>
<tr><td>2</td><td>GROUP BY clause is used in a SELECT statement in combination with aggregate functions to group the result based on distinct values in a column.</td></tr>
<tr><td>3</td><td>SELECT Category, AVG(Salary) FROM Hotel GROUP BY Category;</td></tr>
<tr><td>4</td><td>Single row function:
1. It operates on a single row at a time
2. It returns one result per row
Aggregate function:
1.it operates on group of rows
2.it returns one result for a group of rows</td></tr>
<tr><td>5</td><td>Rohini is getting different answer because of presence of NULL value in Fee column of the table because count (attribute name) does not consider Null values
So, count(*) counted all rows
While count(Fee) counted only non null values in fee column.</td></tr>
<tr><td>6</td><td>SELECT Deptcode,MAX(Salary) FROM Employee GROUP BY DEPTCODE;</td></tr>
<tr><td>7</td><td>Most aggregate functions ignore null values when calculating results except count(column name). This means that if you use an aggregate function on a set of values that include null values, the function will ignore the null values and return a single value. For example, if you use the AVG() function on a set of values that includes null values, the average will be calculated without considering the null values.</td></tr>
<tr><td>8</td><td>Order By clause: The ORDER BY command is used to sort the result set in ascending or descending order.</td></tr>
<tr><td>9</td><td>The problem with the given SQL query is that WHERE clause should not be used with Group By clause.
To correct the error, HAVING clause should be used instead of WHERE.
Corrected Query:
SELECT HOUSE, COUNT(*) FROM STUDENT GROUP BY HOUSE HAVING HOUSE= 'RED' OR HOUSE='YELLOW';</td></tr>
<tr><td>10</td><td><table><tr><td>PRIMARY KEY</td><td>CANDIDATE KEY</td></tr><tr><td>It is the minimum super key</td><td>It is not the minimum super key</td></tr><tr><td>For the attribute which is selected as the primary key, it will always have unique and non-null value</td><td>For the attribute which is selected as a candidate key, it will always have a unique value. It may contain null values unless the attribute constraint is specified as not null.</td></tr></table></td></tr>
<tr><td>11</td><td>Ans: a. POWER () returns the value of a number raised to the power of another number, while SUM() returns the sum of the values stored in a specific column.
b. POWER () is a single row function while SUM() is a group/aggregate function.</td></tr>
</table>

<table>
<tr><td></td><td>c. POWER () accepts two parameters while SUM() accepts one parameter</td></tr>
<tr><td>12</td><td><table><tr><td>Count(Distinct(Product))</td></tr><tr><td>6</td></tr></table></td></tr>
<tr><td></td><td><table><tr><td>Product</td><td>Price</td></tr><tr><td>Sun cream</td><td>678</td></tr><tr><td>Beauty cream</td><td>5400</td></tr></table></td></tr>
<tr><td>13</td><td>1. Select monthname(dateofbirth);
2. Select lower(email);
3. Select length(name);</td></tr>
<tr><td>14</td><td>When we use GROUP BY clause (for grouping of data) and ORDER BY clause (for sorting data)together, the ORDER BY clause always follows other clauses. That is, the GROUP BY clause will come before ORDER BY clause.
For example,
SELECT EMP_ID, SUM(SALARY) AS ‘ANNUAL SALARY’ FROM EMPLOYEE
GROUP BY DEPTID
ORDER BY EMP_ID DESC;</td></tr>
<tr><td>15</td><td>The difference between WHERE and HAVING clause is that WHERE conditions are applicable on individual rows whereas HAVING conditions are applicable on groups as formed by GROUP BY clause</td></tr>
<tr><td>16</td><td>The ORDER BY clause is used to show the output of the select query in a sorted manner as per the field name given in the ORDER BY clause. The result can be arranged in the ascending or descending order of the mentioned field.
The GROUP BY clause is used to group rows in a given field and then perform the mentioned actions such as apply an aggregate functions. e.g., max(), min() etc on the entire group as per the specific condition (through HAVING clause.)</td></tr>
<tr><td>17</td><td>A. Distinct TID
101
102
103
104
B. TID COUNT(*) MIN(FEES)
101 2 12000
B. CNAME
Digital Marketing
Mobile Application Development</td></tr>
</table>

	C. AVG(FEES) 15500
18	A. DEPARTMENT AVG(SALARY) Computer Sc 16500 History 30000 Mathematics 25000 B. MAX(Date_of_Join) MIN(Date_of_Join) 2021-09-05 2017-03-24 C. NAME SALARY DEPARTMENT PLACE Randeep 30000 Mathematics Jaipur Samaira 40000 History Ahmedabad Raman 25000 Mathematics Jaipur Shyam 30000 History Ahmedabad Shiv 21000 Computer Sc Nagpur D. NAME PLACE Saman Ahmedabad Samaira Ahmedabad Shalakha Jaipur

THREE MARKS QUESTIONS

1

Write outputs for SQL queries (i) to (iii) which are based on the given table EMPLOYEE:

TABLE: EMPLOYEE

EMPNO	NAME	DOJ	SALARY	CITY
5001	SUMIT SINGH	2012-05-24	55000	JAIPUR
5002	ASHOK SHARMA	2015-10-25	65000	DELHI
5003	VIJAY SINGH	2009-09-09	85000	JAIPUR
5004	RAKESH VERMA	2020-12-21	60000	AGRA
5006	RAMESH KUMAR	2011-01-22	72000	DELHI

i. SELECT LENGTH(NAME) FROM EMPLOYEE WHERE SALARY>75000;
ii. SELECT NAME FROM EMPLOYEE WHERE MONTH(DOJ)=12;
iii. SELECT MOD(SALARY, DAY(DOJ)) FROM EMPLOYEE WHERE CITY= 'JAIPUR';

2

Based on table VEHICLE given here, write suitable SQL queries for the following:

V_no	Type	Company	Price	Qty
AW125	Wagon	Maruti	250000	25
J0083	Jeep	Mahindra	4000000	15
S9090	SUV	Mitsubishi	2500000	18
M0892	Mini van	Datsun	1500000	26
W9760	SUV	Maruti	2500000	18
R2409	Mini van	Mahindra	350000	15

A.Display the average price of each type of vehicle having quantity more than 20.
B.Count the type of vehicles manufactured by each company.
c. Display the total price of each types of vehicles

3

Write suitable SQL queries for the following
TABLE : COURSE

CID	CNAME	FEES	STARTDATE	TID
C201	AGDCA	12000	2018-07-02	101
C202	ADCA	15000	2018-07-15	103
C203	DCA	10000	2018-10-01	102
C204	DDTP	9000	2018-09-15	104
C205	DHN	20000	2018-08-01	101
C206	O LEVEL	18000	2018-07-25	105

i) SELECT LENGTH(CNAME) FROM COURSE WHERE FEES<10000;
ii) SELECT CNAME FROM COURSE WHERE MONTH (STARTDATE)=8;
iii) SELECT MOD (FEE, DAY(STARTDATE)) FROM Course WHERET ID=104;

4

Write outputs for SQL queries (A) to (C) which are based on the given table GAME

GID	NAME	DATEOFGAME	UNDER	WINNER
1	JUDO	2022-10-17	17	RAMESH
2	BADMINTON	2022-5-18	14	KIRTI
3	JUDO	2022-8-18	19	KAMAL
4	TAEKWONDO	2021-7-20	14	SADIQ
5	CHESS	2021-5-6	17	ALANKAR

	A. . Select name, under, winner from GAME where month(dateofgame)>7; B. Select lcase(mid(winner,2,3)) from GAME where NAME like "%O"; C. Select mod(under, month(dateofgame)) from GAME where NAME="JUDO";
5	Based on table STOCK given here, write suitable SQL queries for the following: **STOCK** **STOCKID** | **NAME** | **COMPANY** | **TYPE** | **DOPURCHASE** | **QUANTITY** 1 | Photoshop | Adobe | SW | 5-Oct-2022 | 1 2 | Windows 10 | Microsoft | SW | 15-Apr-2021 | 5 3 | Mother Board | ASUS | HW | 8-Sep-2022 | 5 4 | Office 2007 | Microsoft | SW | 8-Jul-2022 | 2 5 | Hard Disk | Seagate | HW | 6-Feb-2021 | 10 6 | Azure | Microsoft | SW | 17-Jul-2022 | 6 7 | CD ROM | Seagate | HW | 31-Jul-2021 | 5 8 | Reader | Adobe | SW | 28-Aug-2022 | 2 A. Display company wise highest Quantity available. B. Display year wise lowest Quantity available. C. Display total number of Software and Hardware type stock
6	Explain each of the following with illustrations using a table (i) Candidate Key (ii) Primary Key (iii) Foreign Key
7	A relation Vehicles is given below : **Vno** | **Type** | **Company** | **Price** | **Qty** *AW125* | *Wagon* | *Maruti* | *250000* | *25* *J0083* | *Jeep* | *Mahindra* | *4000000* | *15* *S9090* | *SUV* | *Mitsubishi* | *2500000* | *18* *M0892* | *Mini van* | *Datsun* | *1500000* | *26* *W9760* | *SUV* | *Maruti* | *2500000* | *18* *R2409* | *Mini van* | *Mahindra* | *350000* | *15* Write SQL Commands to : (a) Display the average price of each type of vehicle having quantity more than 20. (b) Count the type of vehicles manufactured by each company. (c) Display the total price of all the types of vehicles.
8	Write SQL queries for (i) to (iii), which are based on the following table PARTICIPANTS: **PNO** | **EVENT** | **SNAME** | **CLASS** | **DOB** *P1* | *DEBATE* | *SANYAM* | *12* | *2001-12-25* *P2* | *DEBATE* | *SHRUTI* | *10* | *2003-11-10* *P3* | *DEBATE* | *MEHER* | *12* | *2001-11-10* *P4* | *QUIZ* | *SAKSHI* | *11* | *2002-10-12* *P5* | *QUIZ* | *RITESH* | *12* | *2001-10-12* *P6* | *QUIZ* | *RAHUL* | *10* | *2003-10-12* *P7* | *CROSSWORD* | *AMEER* | *11* | *2002-05-09* *P8* | *CROSSWORD* | *MINAKSHI* | *12* | *2001-05-09* (i) To display details of all PARTICIPANTS of class 10 and 12. (ii) To display the SNAME and Class of all PARTICIPANTS in ascending order of their SNAME. (iii) To display the number of PARTICIPANTS along with their respective CLASS, of every CLASS.

ANSWERS

1	**(i) 11** **(ii) RAKESH VERMA** **(iii) 16,4**
2	**i)SELECT TYPE,AVG(PRICE) FROM VEHICLE GROUP BY TYPE HAVING QTY>20;** **ii) SELECT TYPE,COUNT(*) FROM VEHICLE GROUP BY COMPANY;** **III) SELECT TYPE, PRICE* QTY AS TOTAL PRICE FROM VEHICLE GROUP BY TYPE;**
3	**i) 4** **ii) DHN** **iii) 0**
4	A. Name Under Winner Judo 17 RAMESH Judo 19 KAMAL B. lcase(mid(winner,2,3)) ame ama adi C. mod(under, month(dateofgame)) 7 3
5	A. select COMPANY, MAX(Quantity) from STOCK group by COMPANY; B. select YEAR(DOPURCHASE), MIN(Quantity) from STOCK group by year(DOPURCHASE); C. select TYPE, count(TYPE) from STOCK group by TYPE
6	(i) Candidate Key :It refers to any column/attribute that can uniquely identify record in a table. **(ii)** Primary key : It referes to designated attribute(s)/column(s) that uniquely identifies a row/tuple in a table/relation. It is one of the candidates keys. (iii) Foreign key :is an attribute in a table which is the primary key in linked table
7	(a) SELECT Type, avg(Price) FROM Vehicle GROUP BY Type having Qty>20; (b) SELECT Company, count(Distinct Type) FROM Vehicle GROUP BY Compnay; (c) SELECT Type, Sum(Price*Qty) FROM Vehicle GROUP BY Type;
8	(i) SELECT * FROM PARTICIPANTS WHERE CLASS IN(10,12); OR SELECT * FROM PARTICIPANTS WHERE CLASS = 10 OR CLASS=12; (ii) SELECT SNAME, CLASS FROM PARTICIPANTS ORDER BY SNAME; (iii) SELECT COUNT(*), CLASS FROM PARTICIPANTS GROUP BY CLASS;

FOUR MARKS QUESTIONS

1

Neha creates a table FURNITURE with a set of records to maintain the records of furniture purchased by her. She has entered the 7 records in the table. Help her to find the answers of following questions:-

TABLE : FURNITURE

FID	NAME	DATEOFPURCHASE	COST	DISCOUNT
B001	Double Bed	03-Jan-2018	45000	10
T010	Dining Table	10-Mar-2020	51000	12
B004	Single Bed	19-Jul-2021	22000	10
C003	Long Back Chair 6	30-Dec-2020	12000	10
T006	Console Table	17-Nov-2019	15000	12
B006	Bunk Bed	01-Jan-2021	28000	13

i. Write a query to display Furniture name in upper case.
ii. Write a query to display the highest cost of the furnitures.
iii. Write a query to count total number of furnitures having discount more than 10.

OR (Option for part iii only)

Write a query to count year wise total number of furnitures purchased.

2

Sahil, a database administrator has designed a database for Vehicles in a Service Centre. Help him by writing answers of the following questions based on the given table:

Vehicle:

V_no	Type	Company	Price	Qty
AW125	Wagon	Maruti	250000	25
J0083	Jeep	Mahindra	4000000	15
S9090	SUV	Mitsubishi	2500000	18
M0892	Mini van	Datsun	1500000	26
W9760	SUV	Maruti	2500000	18
R2409	Mini van	Mahindra	350000	15

Write SQL command to:

a. Display the company name in upper case.
b. Display the lowest price of the Vehicle. c. Count the type of vehicles manufactured by each company.

OR (Option for part iii only)

Display the sum of price of each type of vehicles.

3

Anil, a movie information collector has designed a database for Indian movies. Help him by writing answers of the following questions based on the given table

MOVIE: (1+1+2)

MOVIEID	NAME	RATING	PRODUCTION	COLLECTION	DORELEASE
201	NadiyaKe Par	A+	Rajshree	400	15-Aug-1989
202	Hum Aapke Hain Kaun	A+	Dharma	1500	4-May-1992
203	Veer Zaara	A	Yashraj	1100	25-Oct-2004
204	Chandni	A+	Yashraj	2000	8-Nov-1989
205	Om Shanti Om	A	Red Chillies	2007	14-Nov-2007

A. Write a query to display movie name and production – both in upper case.
B. Write a query to display all details of movies released in year 1989.
C. Write a query to count production wise total number of movies.

OR (Option for part C only)

Write a query to count rating wise total number of movies

4

AKSHITA, a database administrator has designed a database for a Computer Stock. (1+1+2)

Help her by writing answers of the following questions based on the given table:

TABLE: Stock

PID	PNAME	CATEGORY	QTY	PRICE
1	KEYBOARD	IQ	15	450
2	MOUSE	IQ	10	350
3	WI-FI ROUTER	NW	5	2600
4	SWITCH	NW	3	3000
5	PRINTER	O	4	17000

5

Consider the following table STOCK and DEALERS and answer the following parts of this question :

Table :STOCK

ItemNo	Item	Dcode	Qty	UnitPrice	StockDate
5005	*Ball Pen 0.5*	*102*	*100*	*16*	*31-Mar-10*
5003	*Bal Pen 0.25*	*102*	*150*	*20*	*01-Jan-10*
5002	*Gel Pen Premium*	*101*	*125*	*14*	*14-Feb-10*
5006	*Gel Pen Classis*	*101*	*200*	*22*	*01-Jan-09*
5001	*Eraser Small*	*102*	*210*	*5*	*19-Mar-09*
5004	*Eraser Big*	*102*	*60*	*10*	*12-Dec-09*
5009	*Sharpener Classis*	*103*	*160*	*8*	*23-Jan-09*

Table :DEALERS

Dcode	Dname
101	Reliable Stationers
103	Classis Plastics
102	Clear Deals

Give the output of the following SQL queries:

(i) SELECT COUNT(DISTINCT Dcode) FROM STOCK;

(ii) SELECT QTY*UnitPrice FROM STOCK WHERE ItemNo=5006;

(iii) SELECT Item, Dname FROM STOCK S DEALERS D WHERE S.Dcode=D.Dcode AND ItemNo=5004;

(iv) SELECT MIN(StockDate) FROM STOCK;

ANSWERS

1	i) Select upper(Name) from Furniture;
	ii) Select Max(cost) from Furniture;
	iii) Select count(*) from furniture where discount>10;
	OR
	Select Name, Count(*) from furniture
	Group by year(dateofpurchase);

2	i) Select upper(company) from vehicle;
	ii) Select MIN(price) from vehicle;
	iii) Select type,count(*) from vehicle group by type;
	iv) Select type,sum(price) from vehicle group by type;

3	A. Select upper(name), upper(production) from movie; B. Select * from movie where year(DORelease)=1989; C. Select production, count(name) from movie group by production; OR Select Rating, count(name) from movie group by rating;
4	A. SELECT UPPER(PNAME) FROM STOCK; B. SELECT* FEOM STOCK ORDER BY PRICE DESC; C. SELECT CATEGORY,MAX(PRICE) FROM STOCK GROUP BY CATEGORY; OR SELECT CATEGORY,SUM(QTY) FROM STOCK GROUP BY CATEGORY;
5	i) COUNT(DISTINCT Dcode) --- 3 ii)QTY*UnitPrice --- 4400 iii) Item Dname Eraser Big Clear Deals iv)MIN(StockD --- --- 01-Jan-09

FIVE MARKS QUESTIONS

<table>
<tr><td>1</td><td>Explain the following SQL functions using suitable examples.
i) MONTHNAME()
ii) SUBSTRING()
iii) LTRIM()
iv) ROUND()
v) RIGHT()</td></tr>
<tr><td>2</td><td>Write suitable SQL query for the following:
i. Display 7 characters extracted from 7th left character onwards from the string ‘INFORMATICS PRACTICES’.
ii. Display the position of occurrence of string ‘COME’ in the string ‘WELCOME WORLD’.
iii. Round off the value 2334.78 to one decimal place.
iv. Display the remainder of 200 divided by 7.
Remove all the expected leading and trailing spaces from a column userid of the table ‘USERS’.</td></tr>
<tr><td>3</td><td>Explain the following SQL functions using suitable examples.
i. UCASE() ii. TRIM() iii. MID() iv. DAYNAME() v. POWER()</td></tr>
<tr><td></td><td></td></tr>
<tr><td>4</td><td>Write suitable SQL query for the following:
i. Display 5 characters extracted from 3th left character onwards from the string ‘INDIA RISING’.
ii. Display the position of occurrence of string ‘FUNDA’ in the string ‘PYTHON FUNDAMENTALS.
iii. Round off the value 453.668 to two decimal place.
iv. Display the remainder of 120 divided by7.
v. Remove all the expected leading and trailing spaces from a column student_id of the table ‘student’.</td></tr>
<tr><td></td><td></td></tr>
<tr><td>5</td><td>Consider a database LOANS with the following table:

Table: Loan_Accounts
<table>
<tr><th>AccNo</th><th>Cust_Name</th><th>Loan_Amount</th><th>Installments</th><th>Int_Rate</th><th>Start_Date</th></tr>
<tr><td>1</td><td>R.K. Gupta</td><td>300000</td><td>36</td><td>12.00</td><td>2009-07-19</td></tr>
<tr><td>2</td><td>S.P. Sharma</td><td>500000</td><td>48</td><td>10.00</td><td>2008-03-22</td></tr>
<tr><td>3</td><td>K.P. Jain</td><td>300000</td><td>36</td><td></td><td>2007-03-03</td></tr>
<tr><td>4</td><td>M.P. Yadav</td><td>800000</td><td>60</td><td>10.00</td><td>2008-12-06</td></tr>
<tr><td>5</td><td>S.P. Sinha</td><td>200000</td><td>36</td><td>12.50</td><td>2010-01-03</td></tr>
<tr><td>6</td><td>P. Sharma</td><td>700000</td><td>60</td><td>12.50</td><td></td></tr>
<tr><td>7</td><td>K.S. Dhall</td><td>500000</td><td>48</td><td></td><td>2008-03-05</td></tr>
</table>

Give the output of the following SQL Queries:
1. SELECT Cust_Name, LENGTH(Cust_Name), LCASE(Cust_Name), UCASE(Cust_Name) FROM Loan_Accounts WHERE Int_Rate < 11.00;
2. SELECT LEFT(Cust_Name, 3), Right(Cust_Name, 3), SUBSTR(Cust_Name, 1, 3) FROM Loan_Accounts WHERE Int_Rate > 10.00;
3. SELECT RIGHT(Cust_Name, 3), SUBSTR(Cust_Name, 5) FROM Loan_Accounts;
4. SELECT DAYNAME(Start_Date) FROM Loan_Accounts;</td></tr>
</table>

<table>
<tr><td></td><td>5. SELECT ROUND(Int_Rate*110/100, 2) FROM Loan_Accounts WHERE Int_Rate > 10;</td></tr>
<tr><td>6</td><td>Consider a table ITEM with the following data :
<table>
<tr><th>S.No.</th><th>Itemname</th><th>Type</th><th>Stockdate</th><th>Price</th><th>Discount</th></tr>
<tr><td>1</td><td>Eating Paradise</td><td>Dining Table</td><td>2002-02-19</td><td>11500.58</td><td>25</td></tr>
<tr><td>2</td><td>Royal Tiger</td><td>Sofa</td><td>2002-02022</td><td>31000.67</td><td>30</td></tr>
<tr><td>3</td><td>Decent</td><td>Office Table</td><td>2002-01-01</td><td>25000.623</td><td>30</td></tr>
<tr><td>4</td><td>Pink Feather</td><td>Baby Cot</td><td>2001-01-20</td><td>7000.3</td><td>20</td></tr>
<tr><td>5</td><td>White Lotus</td><td>Double Bed</td><td>2002-02-23</td><td>NULL</td><td>25</td></tr>
</table>
Write SQL queries using SQL functions to perform the following operations:
(i) Display the first 3 characters of the Itemname.
(ii) Display the month name from the Stockdate.
(iii) Display the total price of the whole stock.
(iv) Display the average Price of all the stocks.
(v) Display all the Price round off up to 2 decimal places.</td></tr>
<tr><td>7</td><td>Write suitable SQL query for the following:
A. Display 4 characters extracted from 3rd character onwards from string “IMPOSSIBLE”.
B. Display the position of occurrence of string “GO‟ in the string “LET’s GO to GOA”.
C. Round off the value 257.75 to nearest ten rupees.
D. Display the remainder of 18 divided by 5.
E. Remove all the leading and trailing spaces from a column passwd of the table USER</td></tr>
<tr><td>8</td><td>Write suitable SQL query for the following:
A. Display 7 characters extracted from 7th left character onwards from the string “INDIA SHINING‟.
B. Display the position of occurrence of string “COME‟ in the string “WELCOME WORLD‟.
C. Round off the value 78.779 to 2nd decimal place.
D. Display the remainder of 149 divided by 6.
E. Remove all the expected leading and trailing spaces from a column useridof the table USERS.</td></tr>
</table>

ANSWERS

1	i) MONTHNAME() : **returns the name of the month for a given date.** Select MONTHNAME('2013-12-23') → December ii) SUBSTR():**SUBSTR(STR, position, no. of characters) or MID(STR, position, no. of characters)** Select SUBSTR('Kendriya',4,2) → 'dr' iii) **LTRIM(STR): Removes Spaces on left side of given string.** Select LTRIM(‘ I am learning ‘); → ‘I am learning ‘ iv) **ROUND(N,D) - Rounds number N upto given D no. of digits** Select Round(2123.7898,2); → 2123.79 v) **RIGHT(STR,N) : extract N characters from right side of given String** Select RIGHT('PYTHON',4) → 'THON'
2	A. select mid(“INFORMATICS PRACTICES‟, 7,7); B. select INSTR(“WELCOME WORLD”, “COME”); C. select round(2334.78,1); D. select mod(200, 7); E. select trim(USERID) from USER;
3	1.UCASE(): It converts the string into upper case. Example: SELECT UCASE(‘welcome world’); Output: WELCOME WORLD 2.TRIM(): It removes the leading and trailing spaces from the given string. Example: SELECT TRIM(‘ Welcome world ‘); Output: Welcome world 3. MID(): It extracts the specified number of characters from given string. Example: SELECT MID(‘ Welcome world,4,,4); Output: Come 4. DAYNAME(): It returns the weekday name for a given date. Example: SELECT DAYNAME(‘2022-07-22’); Output: Friday 5. POWER(): It returns the value of a number raised to the power of another number. Example: SELECT POW(6,2); Output: 36
4	A. select mid(“INDIA RISING‟, 3, 5); B. select INSTR(“PYTHON FUNDAMENTALS”, “FUNDA”); C. select round(453.668,2); D. select mod(120,7); E. select trim(STUDENTID) from STUDENT;

5

1.

Cust_Name	LENGTH(Cust_Name)	LCASE(Cust_Name)	UCASE(Cust_Name)
S.P. Sharma	11	s.p.sharma	S.P.SHARMA
M.P. Yadav	10	m.p.yadav	M.P.YADAV

2.

LEFT(Cust_Name, 3)	Right(Cust_Name, 3)	SUBSTR(Cust_Name, 1, 3)
R.K	Pta	R.K
S.P	Nha	S.P
P.	Rma	P.

3

RIGHT(Cust_Name, 3)	SUBSTR(Cust_Name, 5)
Pta	Gupta
Rma	Sharma
Ain	Jain
Dav	Yadav
Nha	Sinha
Rma	Sharma
All	Dhall

4.

DAYNAME(Start_Date)
Sunday
Saturday
Saturday
Saturday
Sunday
Wednesday

	5. ROUND(Int_Rate*110/100, 2) 13.2 13.75 13.75
6	**1.** SELECT LEFT(Itemname,3) FROM ITEM ; OR SELECT MID(Itemname,1,3) FROM ITEM ; OR SELECT SUBSTR(Itemname,1,3) FROM ITEM ; OR SELECT SUBSTRING(Itemname,1,3) FROM ITEM ; 2. SELECT MONTHNAME(Stockdate) FROM ITEM ; **3.** SELECT SUM(Price) FROM ITEM ; **4.** SELECT AVG(Price) FROM ITEM ; **5.** SELECT ROUND(Price,2) FROM ITEM ;
7	A. select mid(“IMPOSSIBLE‟, 3, 4); B. select INSTR(“LET‟s GO to GOA”, “GO”); C. select round(257.75, -1); D. select mod(18, 5); E. select trim(passwd) from USER;
8	A. select mid('INDIA SHINING',7,7); B. select INSTR('WELCOME WORLD','COME'); C. select round(78.779,2); D. select mod(149,6); E. select trim(userid) from users;