1. Aggregate functions are functions that take a _____ as input and return a single value.
a) Collection of values
b) Single value
c) Aggregate value
d) Both Collection of values & Single value

Answer: a

2. 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)

Answer: b

3. SELECT COUNT (____ ID) FROM teaches WHERE semester = 'Spring' AND YEAR = 2010;
If we do want to eliminate duplicates, we use the keyword _____ in the aggregate expression.
a) Distinct
b) Count
c) Avg
d) Primary key

Answer: a

4. All aggregate functions except _____ ignore null values in their input collection.
a) Count (attribute)
b) Count(*)
c) Avg
d) Sum

Answer: b

5. The EXISTS keyword will be true if:
a) Any row in the subquery meets the condition only
b) All rows in the subquery fail the condition only
c) Both of these two conditions are met
d) Neither of these two conditions is met

Answer: a

6. The ____ connective tests for set membership, where the set is a collection of values produced by a select clause. The ____ connective tests for the absence of set membership.
a) Or, in
b) Not in, in
c) In, not in
d) In, or

Answer: c

7. Which of the following should be used to find all the courses taught in the Fall 2009 semester but not in the Spring 2010 semester.
a) SELECT DISTINCT course id FROM SECTION WHERE semester = 'Fall' AND YEAR= 2009 AND course id NOT IN (SELECT course id FROM SECTION WHERE semester = 'Spring' AND YEAR= 2010);
b) SELECT DISTINCT course_id FROM instructor WHERE name NOT IN ('Fall', 'Spring');
c) (SELECT course idFROM SECTIONWHERE semester = 'Spring' AND YEAR= 2010)
d) SELECT COUNT (DISTINCT ID) FROM takesWHERE (course id, sec id, semester, YEAR) IN (SELECT course id, sec id, semester, YEARFROM teachesWHERE teaches.ID= 10101);

Answer: a

8. How many tables may be included with a join?
A. One
B. Two
C. Three
D. All the above

Answer: d

9. The SQL WHERE clause
A. Limits the column data that are returned
B. Limits the row data are returned
C. Both A and B are correct.
D. Neither a or b is correct

Answer: b

10. We can test for the nonexistence of tuples in a subquery by using the _____ construct.
a) Not exist
b) Not exists
c) Exists
d) Exist

Answer: b

---

1. Examine the description of the EMPLOYEES table:

| | |
|---|---|
| EMP_ID NUMBER (4) | NOT NULL |
| LAST_NAME | VARCHAR2 (30) NOT NULL |
| FIRST_NAME | VARCHAR2 (30) |
| DEPT_ID | NUMBER (2) |
| JOB_CAT | VARCHAR (30) |

SALARY NUMBER (8, 2)

Which statement shows the department ID, minimum salary, and maximum salary paid in that department, only if the minimum salary is less than 5000 and maximum salary is more than 15000?

A. SELECT dept_id, MIN (salary), MAX (salary) FROM employees WHERE MIN(salary) < 5000 AND MAX (salary) > 15000;
B. SELECT dept_id, MIN (salary), MAX (salary) FROM employees WHERE MIN (salary) < 5000 AND MAX (salary) 15000 GROUP BY dept_id;
C. SELECT dept_id, MIN(salary), MAX(salary) FROM employees HAVING MIN (salary) < 5000 AND MAX (salary)
D. SELECT dept_id, MIN (salary), MAX (salary) FROM employees GROUP BY dept_id HAVING MIN(salary) < 5000 AND MAX (salary) > 15000
E. SELECT dept_id, MIN (salary), MAX (salary) FROM employees GROUP BY dept_id, salary HAVING MIN (salary) < 5000 AND MAX (salary) > 15000;

ANS: D

2. The EMPLOYEES table contains these columns: EMPLOYEE_ID NUMBER(4) ENAME VARCHAR2 (25) JOB_ID VARCHAR2(10) Which SQL statement will return the ENAME, length of the ENAME, and the numeric position of the letter "a" in the ENAME column, for those employees whose ENAME ends with a the letter "n"?

A. SELECT ENAME, LENGTH(ENAME), INSTR(ENAME, 'a') FROM EMPLOYEES WHERE SUBSTR(ENAME, -1, 1) = 'n';
B. SELECT ENAME, LENGTH(ENAME), INSTR(ENAME, ,-1,1) FROM EMPLOYEES WHERE SUBSTR(ENAME, -1, 1) = 'n';
C. SELECT ENAME, LENGTH(ENAME), SUBSTR(ENAME, -1,1) FROM EMPLOYEES WHERE INSTR(ENAME, 1, 1) = 'n';
D. SELECT ENAME, LENGTH(ENAME), SUBSTR(ENAME, -1,1) FROM EMPLOYEES WHERE INSTR(ENAME, -1, 1) = 'n';

ANS: A

3. You would like to display the system date in the format "Monday, 01 June, 2001". Which SELECT statement should you use?

A. SELECT TO_DATE (SYSDATE, 'FMDAY, DD Month, YYYY') FROM dual;
B. SELECT TO_CHAR (SYSDATE, 'FMDD, DY Month, YYYY') FROM dual;
C. SELECT TO_CHAR (SYSDATE, 'FMDay, DD Month, YYYY') FROM dual;
D. SELECT TO_CHAR (SYSDATE, 'FMDY, DDD Month, YYYY') FROM dual;
E. SELECT TO_DATE (SYSDATE, 'FMDY, DDD Month, YYYY') FROM dual;

Ans: C

4. What is true about joining tables through an Equijoin?

A. You can join a maximum of two tables through an Equijoin.
B. You can join a maximum of two columns through an Equijoin.
C. You specify an Equijoin condition in the SELECT or FROM clauses of a SELECT statement.
D. To join two tables through an Equijoin, the columns in the join condition must be primary key and foreign key columns.
E. You can join n tables (all having single column primary keys) in a SQL statement by specifying a minimum of n-1 join conditions.

Ans. E

5. Which three is true regarding the use of outer joins?

A. You cannot use IN operator in a condition that involves an outer join.
B. You use (+) on both sides of the WHERE condition to perform an outer join.
C. You use (*) on both sides of the WHERE condition to perform an outer join.
D. You use an outer join to see only the rows that do not meet the join condition.
E. In the WHERE condition, you use (+) following the name of the column in the table without matching rows, to perform an outer join.
F. You cannot link a condition that is involved in an outer join to another condition by using the OR operator.

a. A,B,C
b. B,C,D
c. D,E,F
d. A,E,F

Ans: d

6. Evaluate the SQL statement:

SELECT ROUND (TRUNC (MOD (1600, 10),-1), 2) FROM dual;

What will be displayed?

A. 0

B. 1

C. 0.00

D. an error statement

Ans A

7. Evaluate the SQL statement:

TRUNCATE TABLE DEPT;

Which three are true about the SQL statement?

A. It releases the storage space used by the table.
B. It does not release the storage space used by the table.
C. You can roll back the deletion of rows after the statement executes.
D. You can NOT roll back the deletion of rows after the statement executes.
E. You must be the owner of the table or have DELETE ANY TABLE system privileges to truncate the DEPT table
F. An attempt to use DESCRIBE on the DEPT table after the TRUNCATE statement executes will display an error.

a. A,B,C
b. A,D,E
c. A,D,F
d. A,C,D

Answer: b

8. Which three statements are true regarding sub queries?

A. Multiple columns or expressions can be compared between the main query and sub query.

B. Main query and sub query can get data from different tables
C. Sub queries can contain GROUP BY and ORDER BY clauses
D. Main query and sub query must get data from the same tables
E. Sub queries can contain ORDER BY but not the GROUP BY clause
F. Only one column or expression can be compared between the main query and subquery

a. A,B,C
b. B,C,D
c. C,D,E
d. A,D,E

Answer: B

9. View the Exhibit and examine the structure of the PRODUCTS, SALES, and SALE_SUMMARY tables.

SALE_VW is a view created using the following command:

SQL>CREATE VIEW sale_vw AS SELECT prod_id, SUM(quantity_sold) QTY_SOLD FROM sales GROUP BY prod_id;

You issue the following command to add a row to the SALE_SUMMARY table:

SQL>INSERT INTO sale_summary (SELECT prod_id, prod_name, qty_sold FROM sale_vw JOIN products USING (prod_id) WHERE prod_id = 16);

What is the outcome?

A. It executes successfully.

B. It gives an error because a complex view cannot be used to add data into the SALE_SUMMARY table.

C. It gives an error because the column names in the subquery and the SALE_SUMMARY table do not match.

D. It gives an error because the number of columns to be inserted does not match with the number of columns in the SALE_SUMMARY table.

Answer: D

10. Which statements are true regarding the FOR UPDATE clause in a SELECT statement?

a. It locks only the columns specified in the SELECT list.

b. It locks the rows that satisfy the condition in the SELECT statement.

c. It can be used only in SELECT statements that are based on a single table.

d. It can be used in SELECT statements that are based on a single or multiple tables.

e. After it is enforced by a SELECT statement, no other query can access the same rows until a COMMIT or ROLLBACK is issued.

A. a,b,c
B. b,d,e
C. b,c
D. b,d
E. a,b,c,d,e

Answer: B,D

11. View the Exhibits and examine the structures of the COSTS and PROMOTIONS tables.

Evaluate the following SQL statement:

SQL> SELECT prod_id FROM costs WHERE promo_id IN (SELECT promo_id FROM promotions WHERE promo_cost < ALL (SELECT MAX(promo_cost) FROM promotions GROUP BY (promo_end_datepromo_begin_date)));

What would be the outcome of the above SQL statement?

a. It displays prod IDs in the promo with the lowest cost.
b. It displays prod IDs in the promos with the lowest cost in the same time interval.
c. It displays prod IDs in the promos with the highest cost in the same time interval.
d. It displays prod IDs in the promos with cost less than the highest cost in the same time interval.

Answer: D

12. Evaluate the following SQL statement:

SQL> SELECT cust_id, cust_last_name

FROM customers WHERE cust_credit_limit IN (select cust_credit_limit FROM customers WHERE cust_city ='Singapore');

Which statement is true regarding the above query if one of the values generated by the subquery is NULL?

a. It produces an error.
b. It executes but returns no rows.
c. It generates output for NULL as well as the other values produced by the subquery.
d. It ignores the NULL value and generates output for the other values produced by the subquery.

Answer: C

13. Which of the following is true about the PL/SQL data structure VARRAY?
A - It also has a maximum size that cannot be changed.
B - A VARRAY type is created with the CREATE VARRAY statement, at the schema level.
C - Maximum size of a VARRAY can be changed using the ALTER TYPE statement.
D - Maximum size of a VARRAY can be changed using the ALTER VARRAY statement.

Ans: C

14. Which of the following statements is true about implicit cursors?
A. Implicit cursors are used for SQL statements that are not named.

B. Developers should use implicit cursors with great care.

C. Implicit cursors are used in cursor for loops to handle data processing.

D. Implicit cursors are no longer a feature in Oracle.

Ans: A

15. What is the value of customer_id within the nested block in the example below?

```
/* Start main block */
DECLARE
 customer_id NUMBER(9) := 678;
 credit_limit NUMBER(10,2) := 10000;
BEGIN
 /* Start nested block */
DECLARE
 customer_id VARCHAR2(9) := 'AP56';
 current_balance NUMBER(10,2) := 467.87;
BEGIN
-- what is the value of customer_id at this point?
  NULL;
 END;
END;
```

Please select the best answer.

A. 678
B. 10000
C. 'AP56'
D. 467.87

Ans: B.

---

## DBMS MCQ

1.You can add a row using SQL in a database with which of the following?

A. ADD
B. CREATE
C. INSERT
D.MAKE

Answer-c

2.Which of the following is the correct order of keywords for SQL SELECT statements?

A.SELECT,FROM,WHERE
B.FROM,WHERE,SELECT
C.WHERE,FROM,SELECT
D.SELECT,WHERE,FROM

Answer-A

3. The result of a SQL statement is a(n)_____.

A.report
B.form
C.file
D.table

Answer-D

4.Which of the following do you need to consider when you make a table in SQL?
A. Data types
B.Primary Keys
C.Default Values
D.All of the above

Answer-D

5. The view of total database content is
A. Conceptual view
B.Internal View
C.External View
D.Physical View

Answer-A

**7.ODBC stands for**
A. Object Database Connectivity.
B. Oral Database Connectivity.
C. Oracle Database Connectivity.
D. Open Database Connectivity.

Answer-D

**8.An entity set that does not have sufficient attributes to form a primary key is a**
A. strong entity set.
B. weak entity set.
C. simple entity set.
D. primary entity set.

Answer-B

9.**In case of entity integrity, the primary key maybe**
A. not Null
B. Null
C. both Null & not Null.
D. any value.
Answer-A

**10.The database environment has all of the following components except:**
A. Users
B. separate files.
C. Database
D. database administrator.

Answer-A

**12.A logical schema**
A. is the entire database.
B. is a standard way of organising information into accessible parts.
C. describes how data is actually stored on disk.
D. both (A) and (C)
Answer-A

**13.The property/properties of a database is/are:**
A. It is an integrated collection of logically related records.
B. It consolidates separate files into a common pool of data records.
C. Data stored in a database is independent of the application programs using it.
D. All of the above.
Answer-d

**14.Key to represent the relationship between tables is called**
A. Primary key
B. Secondary Key
C. Foreign Key
D. None of these
Answer-c

---

1. **Select invalid variable types**
   A. CHAR
   **B. VARCHAR1**
   C. VARCHAR2
   D. INTEGER

Answer-B

2. **Which of the following is used to declare a record?**
   **A. %ROWTYPE**
   B. %TYPE
   C. Both A & B
   D. None of the above

Answer-A

3. **In a PL/SQL block, a variable is declared as NUMBER without an initial value. What will its value be when it is first used in the executable section of the PL/SQL block?**
   **A. NULL**
   B. 0
   C. Results in a compilation error
   D. An exception will be raised

Answer-A

4. **Which of the following is true about PL/SQL programs?**
   A. PL/SQL programs can exist with or without any SQL statements.
   B. PL/SQL programs can exist only with any SQL statements.
   C. PL/SQL programs can exist only without any SQL statements
   D. SQL programs can exist only with PL/SQL statements

Answer-A

5. **Which of the following is not true about keywords?**
   A. Reserved words and keywords are identifiers that have special meaning in PL/SQL.
   B. The difference between reserved words and keywords is that reserved words cannot be used as identifiers.
   C. Keywords can be used as identifiers, but it is not recommended
   **D.** Reserved keywords can be used as ordinary user-defined identifiers.

Answer-D

6. Which of the following keyword is used with Data Control Language (DCL) statements?
   **A.** SELECT
   **B.** INSERT
   **C.** DELETE
   **D.** GRANT

Answer-D

7. A type of query that is placed within a WHERE or HAVING clause of another query is called
   **A.** Master query
   **B.** Sub query
   **C.** Super query
   **D.** Multi-query

Answer-B

8. A command that lets you change one or more fields in a record is
   **A.** Insert
   **B.** Modify
   **C.** Look-up
   **D.** All of the Mentioned

Answer-B

9. **Which of the following is a Data Model?**
   A. Entity-Relationship model
   B. Relational data model
   C. Object-Based data model
   D. All of the above
   Answer-D

10. **The column header is referred to as**

A. Table

B. Relation

C. Attributes

D. Domain

Answer-C

---

1. Which data manipulation command is used to combines the records from one or more tables?

**A.** SELECT

**B.** PROJECT

**C.** JOIN

**D.** PRODUCT

Answer-C

2. SQL permits attribute names to be repeated in the same relation. (True or False)

**A.** FALSE

**B.** TRUE

Answer-A

3. Which of the following operations requires the relations to be union compatible?

**A.** UNION

**B.** INTERSECTION

**C.** DIFFERENCE

**D.** ALL OF THESE

Answer-D

4. Which of the following is a legal expression in SQL?

**A.** SELECT NULL FROM SALES;

B. SELECT NAME FROM SALES;

C. SELECT * FROM SALES WHEN PRICE = NULL;

D. SELECT # FROM SALES;

Answer-B

5. The COUNT function in SQL returns the number of _____

A. Values

B. Distinct values

C. Group By

D. Columns

Answer-A

6. The virtual table that its created by data from the result of an SQL 'Select' statement is called _____

A. View

B. Synonym

C. Sequence

D. Transaction

Answer-A

7. What is the other name of INNER JOIN?

a) Equi Join
b) In Join
c) Out Join
d) All of the above
Answer-A

8. List the types of Inner join?

a) Out, In, Equi
b) Left, In, Cross
c) Equi, Natural

d) None of the above

Answer-C

9-What is the purpose of index in SQL server?

a) It leads to enhance the query performance.
b) It leads to provide an index to a record.
c) It leads to perform fast searches.
d) All of the above.

Answer-D

10. Does index take space in Disk?

a) It stores in memory as and when required.
b) Yes, Indexes are stored on the disk.
c) Indexes are never stored on the disk.
d) Index takes no space.

Answer-B

---

1. Consider the above tables A, B and C. How many tuples does the result of the following SQL query contains?

**Table A**

| Id | Name | Age |
|---|---|---|
| 12 | Arun | 60 |
| 15 | Shreya | 24 |
| 99 | Rohit | 11 |

**Table B**

| Id | Name | Age |
|---|---|---|
| 15 | Shreya | 24 |
| 25 | Hari | 40 |
| 98 | Rohit | 20 |
| 99 | Rohit | 11 |

**Table C**

| Id | Phone | Area |
|---|---|---|
| 10 | 2200 | 02 |
| 99 | 2100 | 01 |

```
SELECT A.id
FROM   A
WHERE  A.age > ALL (SELECT B.age
                    FROM   B
                    WHERE  B. name = "arun")
```

a. 4 **b. 3** c. 0 d. 1

Answer-B

**Explanation**. The meaning of "ALL" is the A.Age should be greater than all the values returned by the subquery. There is no entry with name "arun" in table B. So the subquery will return NULL. If a subquery returns NULL, then the condition becomes true for all rows of A (See this for details). So all rows of table A are selected.

2. Database table by name Loan_Records is given below.

| Borrower | Bank_Manager | Loan_Amount |
|---|---|---|
| Ramesh | Sunderajan | 10000.00 |
| Suresh | Ramgopal | 5000.00 |
| Mahesh | Sunderajan | 7000.00 |

What is the output of the following SQL query?

SELECT Count(*) FROM ( ( SELECT Borrower, Bank_Manager FROM Loan_Records) AS S NATURAL JOIN ( SELECT Bank_Manager, Loan_Amount FROM Loan_Records) AS T );

a. 3 b. 9 **c. 5** d.6

Answer-C

**Explanation**: Following will be the result of natural join of above two tables. The key thing to note is that the natural join happens on column name with same name which is Bank_Manager in the above example. "Sunderajan" appears two times in Bank_Manager column, so their will be four entries with Bank_Manager as "Sunderajan".

| **Borrower** | **Bank_Manager** | **Load_Amount** |
|---|---|---|
| Ramesh | Sunderajan | 10000.00 |
| Ramesh | Sunderajan | 7000.00 |
| Suresh | Ramgopal | 5000.00 |
| Mahesh | Sunderajan | 10000.00 |
| Mahesh | Sunderajan | 7000.00 |

3. **Consider a relational table with a single record for each registered student with the following attributes.**
**1. Registration_Number:< Unique registration number for each registered student 2. UID: Unique Identity number, unique at the national level for each citizen 3. BankAccount_Number: Unique account number at the bank. A student can have multiple accounts or joint accounts. This attributes stores the primary account number 4. Name: Name of the Student 5. Hostel_Room: Room number of the hostel Which of the following options is INCORRECT?**
**(A) BankAccount_Number is a candidate key**
(B) Registration_Number can be a primary key
(C) UID is a candidate key if all students are from the same country
(D) If S is a superkey such that S ∩ UID is NULL then S ∪ UID is also a superkey

Answer-A

**Explanation**: A Candidate Key value must uniquely identify the corresponding row in table. BankAccount_Number is not a candidate key. As per the question "A student can have multiple accounts or joint accounts. This attribute stores the primary account number". If two students have a joint account and if the joint account is their primary account, then BankAccount_Number value cannot uniquely identify a row.

4. **A relational schema for a train reservation database is given below.**
**Passenger (pid, pname, age)**
**Reservation (pid, class, tid)**
**Table: Passenger**

| pid | pname | age |
|---|---|---|
| 0 | Sachin | 65 |
| 1 | Rahul | 66 |
| 2 | Sourav | 67 |
| 3 | Anil | 69 |

**Table : Reservation**

| pid | class | tid |
|---|---|---|
| 0 | AC | 8200 |
| 1 | AC | 8201 |
| 2 | SC | 8201 |
| 5 | AC | 8203 |
| 1 | SC | 8204 |
| 3 | AC | 8202 |

**What pids are returned by the following SQL query for the above instance of the tables?**

SELECT pid FROM Reservation WHERE class 'AC' AND EXISTS (SELECT * FROM Passenger WHERE age > 65 AND Passenger. pid = Reservation.pid)

(A) 1, 0
(B) 1, 2
**(C) 1, 3**
(D) 1, 5

Answer-C

Explanation: When a subquery uses values from outer query, the subquery is called correlated subquery. The correlated subquery is evaluated once for each row processed by the outer query.
The outer query selects 4 entries (with pids as 0, 1, 5, 3) from Reservation table. Out of these selected entries, the subquery returns Non-Null values only for 1 and 3.

5. Consider the following relational schema:
**Suppliers(sid:integer, sname:string, city:string, street:string)**
**Parts(pid:integer, pname:string, color:string)**
**Catalog(sid:integer, pid:integer, cost:real)**
Consider the following relational query on the above database:

```
SELECT S.sname
   FROM Suppliers S
     WHERE S.sid NOT IN (SELECT C.sid
                  FROM Catalog C
                  WHERE C.pid NOT IN (SELECT P.pid
                              FROM Parts P
                              WHERE P.color<> 'blue'))
```

Assume that relations corresponding to the above schema are not empty. Which one of the following is the correct interpretation of the above query?

a. Find the names of all suppliers who have supplied a non-blue part.

b. Find the names of all suppliers who have not supplied a non-blue part.

c. Find the names of all suppliers who have supplied only blue parts.

**d. Find the names of all suppliers who have not supplied only blue parts.**

Answer-D

Explanation: **(A):** False, as this may include blue parts and may not include "null" parts. **(B):** Obviously false because it returning other than any blue part. **(C):** Obviously false because it does not return this. **(D):** Correct

6. Consider the following relational schema:
employee(empId, empName, empDept)
customer(custId, custName, salesRepId, rating)
salesRepId is a foreign key referring to empId of the employee relation. Assume that each employee makes a sale to at least one customer. What does the following query return?

```
SELECT empName
    FROM employee E
    WHERE NOT EXISTS ( SELECT custId
                FROM customer C
                WHERE C.salesRepId = E.empId
```

AND C.rating <> `GOOD`);

a. Names of all the employees with at least one of their customers having a ‘GOOD’ rating.

b. Names of all the employees with at most one of their customers having a ‘GOOD’ rating.

c. Names of all the employees with none of their customers having a ‘GOOD’ rating.

**d. Names of all the employees with all their customers having a ‘GOOD’ rating.**

Answer-D

7. Consider the relation "enrolled(student, course)" in which (student, course) is the primary key, and the relation "paid(student, amount)" where student is the primary key. Assume no null values and no foreign keys or integrity constraints. Given the following four queries:

Query1: select student from enrolled where
student in (select student from paid)

Query2: select student from paid where
student in (select student from enrolled)

Query3: select E.student from enrolled E, paid P
where E.student = P.student

Query4: select student from paid where exists
(select * from enrolled where enrolled.student
= paid.student)

Which one of the following statements is correct?

A-All queries return identical row sets for any database

B-Query2 and Query4 return identical row sets for all databases but there exist databases for which Query1 and Query2 return different row sets.

C-There exist databases for which Query3 returns strictly fewer rows than Query2

D-There exist databases for which Query4 will encounter an integrity violation at runtime.

**Explanation:**
Take an example:
Table enrolled

student course

---

abc c1

xyz c1

abc c2

pqr c1

Table paid

student amount

---

abc 20000

xyz 10000

rst 10000

Output of Query 1

abc

abc

xyz

Output of Query 2

abc

xyz

Output of Query 3

abc

xyz

Output of Query 4

abc

xyz

Query 1 and Query 3 may return repetitive student values as "student" is not a key in relation enrolled, however query 2 and query 4 always return same row sets. So, option (B) is correct.

8. **The following table has two attributes A and C where A is the primary key and C is the foreign key referencing A with on-delete cascade.**

A C

---

2 4

3 4

4 3

5 2

7 2

9 5

6 4

**The set of all tuples that must be additionally deleted to preserve referential integrity when the tuple (2,4) is deleted is:**

(a) (3,4) and (6,4)
(b) (5,2) and (7,2)
**(c) (5,2), (7,2) and (9,5)**
(d) (3,4), (4,3) and (6,4)
Answer-C

When (2,4) is deleted. Since C is a foreign key referring A with delete on cascade, all entries with value 2 in C must be deleted. So (5, 2) and (7, 2) are deleted. As a result of this 5 and 7 are deleted from A which causes (9, 5) to be deleted.

**9. The relation book (<u>title</u>, price) contains the titles and prices of different books. Assuming that no two books have the same price, what does the following SQL query list?**

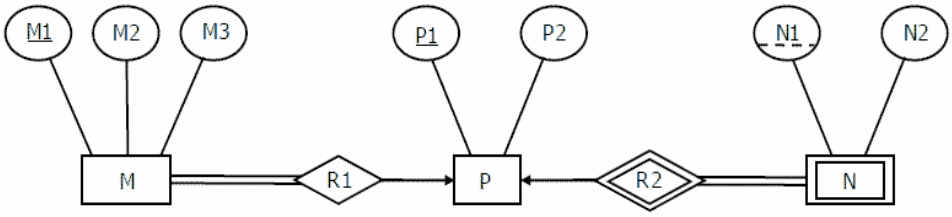
```
select title
from book as B
where (select count(*)
   from book as T
   where T.price > B.price) < 5
```

(a) Titles of the four most expensive books
(b) Title of the fifth most inexpensive book
(c) Title of the fifth most expensive book
**(d) Titles of the five most expensive books**

Answer-D

**Explanation**: When a subquery uses values from outer query, the subquery is called correlated subquery. The correlated subquery is evaluated once for each row processed by the outer query.
The outer query selects all titles from book table. For every selected book, the subquery returns count of those books which are more expensive than the selected book. The where clause of outer query will be true for 5 most expensive book. For example count (*) will be 0 for the most expensive book and count(*) will be 1 for second most expensive book.

10. Consider the following ER diagram.




The minimum number of tables needed to represent M, N, P, R1, R2 is
**(A)** 2
(B) 3
**(C)** 4
**(D)** 5
Answer-B

**Explanation:** Answer is B, i.e, 3 minimum tables.
M, P are strong entities hence they must be represented by separate tables.

Many-to-one and one-to-many relationship sets that are total on the many-side can be represented by adding an extra attribute to the “many” side, containing the primary key of the “one” side. ( This way no extra table will be needed for Relationship sets )

M table is modified to include primary key of P side(i.e. P1). N is weak entity, and is modified to include primary key of P (i.e, P1).

Therefore there would be minimum of 3 tables with schema given below :

M ( M1, M2, M3, P1)

P ( P1, P2 )

N ( P1, N1, N2 )

11. Consider the following relation schema pertaining to a students database:

Student (rollno, name, address)
Enroll (rollno, courseno, coursename)
where the primary keys are shown underlined. The number of tuples in the Student and Enroll tables are 120 and 8 respectively. What are the maximum and minimum number of tuples that can be present in (Student * Enroll), where '*' denotes natural join ?

a. **8,8** b. 120,8 c. 960, 8 d. 960,120

Answer-A

**Explanation**: The result of the natural join is the set of all combinations of tuples in R and S that are equal on their common attribute names. **What is the maximum possible number of tuples?** The result of natural join becomes equal to the Cartesian product when there are no common attributes. The given tables have a common attribute, so the result of natural join cannot have more than the number of tuples in larger table.

Student

| Rollno | name | Address |
|---|---|---|
| 1 | a | abc |
| 2 | b | bcd |
| 3 | c | cde |

Enroll

| Rollno | Courseno | Coursename |
|---|---|---|
| 1 | 12 | pqr |
| 1 | 14 | qrs |
| 1 | 15 | rst |
| 2 | 13 | uvw |
| 2 | 14 | qrs |

Result of natural join

| Rollno | Name | Address | Courseno | Coursename |
|---|---|---|---|---|
| 1 | a | abc | 12 | pqr |
| 1 | a | abc | 14 | qrs |
| 1 | a | abc | 15 | rst |
| 2 | b | bcd | 13 | uvw |
| 2 | b | bcd | 14 | qrs |

**What is the minimum possible number of tuples?**

**a. 8** b. 6. c. 7 d. 12
Answer-A

It might be possible that there is no rollno common. In that case, the number of tuples would be 0. But in the question rollno is a primary key in Student table and it is a prime attribute in the Enroll table. So there is no chance of having null values in the rollno column in enroll table and Student table and every tuple in Enroll will have a parent. So minimum number of tuples possible are 8 (only 8 tuples in the Enroll table). Option (A) is correct.

12. The employee information in a company is stored in the relation
Employee (name, sex, salary, deptName)
Consider the following SQL query
select deptName from Employee where sex = 'M' group by deptName having avg (salary) > (select avg (salary) from Employee)

It returns the names of the department in which

a. the average salary is more than the average salary in the company

b. the average salary of male employees is more than the average salary of all male employees in the company

c. the average salary of male employees is more than the average salary of employees in the same department

**d. the average salary of male employees is more than the average salary in the company**

Answer-D

In this SQL query, we have
select deptName ---------- Select the department name
from Employee ---------- From the database of employees
where sex = 'M' ---------- Where sex is male (M)
group by deptName ---------- Group by the name of the department
having avg (salary) >
(select avg (salary) from Employee) ----- Having the average salary greater than the average salary of all employees in the organization.

So, this query would return the name of all departments in which the average salary of male employees is greater than the average salary of all employees in the company. Hence, D is the correct choice

13. Consider the set of relations shown below and the SQL query that follows.

Students: (Roll_number, Name, Date_of_birth)

Courses: (Course number, Course_name, Instructor)

Grades: (Roll_number, Course_number, Grade)

```
select distinct Name
    from Students, Courses, Grades
    where Students. Roll_number = Grades.Roll_number
        and Courses.Instructor = Korth
        and Courses.Course_number = Grades.Course_number
        and Grades.grade = A
```

Which of the following sets is computed by the above query?

a. Names of students who have got an A grade in all courses taught by Korth

b. Names of students who have got an A grade in all courses

**c. Names of students who have got an A grade in at least one of the courses taught by Korth**

d. None of the above

Answer-C

**Explanation:**
The query gives the name of all the students who have scored "A" grade in any of the courses that are taught by Korth. So, C is the correct choice.

14. Consider the following relation

Cinema (theater, address, capacity)

Which of the following options will be needed at the end of the SQL query
SELECT P1. address

FROM Cinema P1

Such that it always finds the addresses of theaters with maximum capacity?

**a. WHERE P1. Capacity> = All (select P2. Capacity from Cinema P2)**

b. WHERE P1. Capacity> = Any (select P2. Capacity from Cinema P2)

c. WHERE P1. Capacity > All (select max(P2. Capacity) from Cinema P2)

d. WHERE P1. Capacity > Any (select max (P2. Capacity) from Cinema P2)

Answer-A

**Explanation:**
When the **ALL** condition is followed by a list, the optimizer expands the initial condition to all elements of the list and strings them together with AND operators. When the **ANY** condition is followed by a list, the optimizer expands the initial condition to all elements of the list and strings them together with OR operators

15. Consider the relations $r_1$(P, Q, R) and $r_2$(R, S, T) with primary keys P and R respectively. The relation $r_1$ contains 2000 tuples and $r_2$ contains 2500 tuples. The maximum size of the join $r_1 \bowtie r_2$ is :

**a. 2000**

b 2500

c. 4500

d. 5000

Answer-A

**Explanation:**
$r_1 \bowtie r_2$ is a join operation done on the common attribute R. Further R is the primary key of R2 When we take a , the value of common attribute( R2 in this case) should match.The value of R in r2 is matched with corresponding R in r1 . So it will have 2000 tuples. So correct option is (A).

---

1. Evaluate the following SQL statement:

```
SQL> SELECT promo_id, promo_category
FROM promotions
WHERE promo_category = 'Internet' ORDER BY 2 DESC
UNION
SELECT promo_id, promo_category
FROM promotions
WHERE promo_category = 'TV'
UNION
SELECT promo_id, promo_category
FROM promotions
WHERE promo_category ='Radio';
```

**A.** It executes successfully and displays rows in the descending order of PROMO_CATEGORY.
**B.** It produces an error because positional notation cannot be used in the order by clause with set operators.
**C.** It executes successfully but ignores the order by clause because it is not located at the end of the compound statement.
**D.** It produces an error because the order by clause should appear only at the end of a compound query-that is, with the last select statement.
**ANS: D**

2. You want to create a table employees in which the values of columns EMPLOYEES_ID and LOGIN_ID must be unique and not null. Which two SQL statements would create the required table?

A)
```
CREATE TABLE employees(
employee_id NUMBER,
login_id NUMBER,
employee_name VARCHAR2(25),
hire_date DATE,
CONSTRAINT emp_id_pk PRIMARY KEY (employee_id, login_id));
```

B)
```
CREATE TABLE employees(
employee_id NUMBER CONSTRAINT emp_id_pk PRIMARY KEY,
login_id NUMBER UNIQUE,
employee_name VARCHAR2(25),
hire_date DATE);
```

C)
```
CREATE TABLE employees(
employee_id NUMBER,
login_id NUMBER,
employee_name VARCHAR2(100),
hire_date DATE,
CONSTRAINT emp_id_uk UNIQUE (employee_id, login_id));
```

D)
```
CREATE TABLE employees(
employee_id NUMBER,
login_id NUMBER,
employee_name VARCHAR2(100),
hire_date DATE,
CONSTRAINT emp_id_uk UNIQUE (employee_id, login_id),
CONSTRAINT emp_id_nn NOT NULL (employee_id, login_id));
```

E)
```
CREATE TABLE employees(
employee_id NUMBER,
login_id NUMBER,
employee_name VARCHAR2(100),
hire_date DATE,
CONSTRAINT emp_id_uk UNIQUE (employee_id, login_id),
CONSTRAINT emp_id_nn NOT NULL (employee_id, login_id));
```

F)
```
CREATE TABLE employees(
employee_id NUMBER CONSTRAINT emp_id_nn NOT NULL,
login_id NUMBER CONSTRAINT login_id_nn NOT NULL,
employee_name VARCHAR2(100),
hire_date DATE,
CONSTRAINT emp_num_id_uk UNIQUE (employee_id, login_id));
```

**A.** Option A

**B.** Option B

**C.** Option C

**D.** Option D

**E.** Option E

**F.** Options F

**Answer: F**

3. View the Exhibit and examine the structure of the products table.

| Table PRODUCTS | | |
|---|---|---|
| Name | Null? | Type |
| PROD_ID | NOT NULL | NUMBER(6) |
| PROD_NAME | NOT NULL | VARCHAR2(50) |
| PROD_DESC | NOT NULL | VARCHAR2(4000) |
| PROD_CATEGORY | NOT NULL | VARCHAR2(50) |
| PROD_CATEGORY_ID | NOT NULL | NUMBER |
| PROD_UNIT_OF_MEASURE | | VARCHAR2(20) |
| SUPPLIER_ID | NOT NULL | NUMBER(6) |
| PROD_STATUS | NOT NULL | VARCHAR2(20) |
| PROD_LIST_PRICE | NOT NULL | NUMBER(8,2) |
| PROD_MIN_PRICE | NOT NULL | NUMBER(8,2) |

Using the products table, you issue the following query to generate the names, current list price, and discounted list price for all those products whose list price falls below $10 after a discount of 25% is applied on it.

```
SQL>SELECT prod_name, prod_list_price,
          prod_list_price - (prod_list_price * .25) "DISCOUNTED_PRICE"
    FROM products
    WHERE discounted_price < 10;
```

The query generates an error. What is the reason for the error?

**A.** The parenthesis should be added to enclose the entire expression.

**B.** The double quotation marks should be removed from the column alias.

**C.** The column alias should be replaced with the expression in the where clause.

**D.** The column alias should be put in uppercase and enclosed within double quotation marks in the where clause.

**Answer: C**

4. Examine the structure proposed for the transactions table:

```
Name                          Null?    Type
----------------------------- -------- ------------

TRANS_ID                      NOT NULL NUMBER(6)
CUST_NAME                     NOT NULL VARCHAR2(20)
CUST_STATUS                   NOT NULL CHAR
TRANS_DATE                    NOT NULL DATE
TRANS_VALIDITY                         VARCHAR2
CUST_CREDIT_LIMIT                      NUMBER
```

Which two statements are true regarding the creation and storage of data in the above table structure?

**A.** The CUST_STATUS column would give an error.

**B.** The TRANS_VALIDITY column would give an error.

**C.** The CUST_STATUS column would store exactly one character.

**D.** The CUST_CREDIT_LIMIT column would not be able to store decimal values.

**E.** Both A and D

**F.** Both B and C

**Answer: F**

5. See the Exhibit:

Table PROMOTIONS

| Name | Null? | Type |
|---|---|---|
| PROMO_ID | NOT NULL | NUMBER(6) |
| PROMO_NAME | NOT NULL | VARCHAR2(30) |
| PROMO_SUBCATEGORY | NOT NULL | VARCHAR2(30) |
| PROMO_SUBCATEGORY_ID | NOT NULL | NUMBER |
| PROMO_CATEGORY | NOT NULL | VARCHAR2(30) |
| PROMO_CATEGORY_ID | NOT NULL | NUMBER |
| PROMO_COST | NOT NULL | NUMBER(10,2) |
| PROMO_BEGIN_DATE | NOT NULL | DATE |
| PROMO_END_DATE | NOT NULL | DATE |

Which two SQL statements would execute successfully?

A. UPDATE promotions SET promo_cost = promo_cost+100 WHERE TO_CHAR(promo_end_date,'yyyy'>'2000';
B. SELECT promo_begin_date FROM promotions WHERE

TO_CHAR(promo_begin_date,'mon dd yy')='jul 01 98';

C. Only A
D. Only B
E. Both A and B

**Answer:** E

6. Which three statements/commands would cause a transaction to end? (Choose three.)

A. COMMIT
B. SELECT
C. CREATE
D. ROLLBACK
E. Options A, C, D
**Answer:** E

7. See the Exhibit

Table CUSTOMERS

| Name | Null? | Type |
|---|---|---|
| CUST_ID | NOT NULL | NUMBER |
| CUST_FIRST_NAME | NOT NULL | VARCHAR2 (20) |
| CUST_LAST_NAME | NOT NULL | VARCHAR2 (40) |
| CUST_GENDER | NOT NULL | CHAR (1) |
| CUST_YEAR_OF_BIRTH | NOT NULL | NUMBER (4) |
| CUST_MARITIAL_STATUS | | VARCHAR2 (20) |
| CUST_STREET_ADDRESS | NOT NULL | VARCHAR2 (40) |
| CUST_POSTAL_CODE | NOT NULL | VARCHAR2 (10) |
| CUST_CITY | NOT NULL | VARCHAR2 (30) |
| CUST_STATE_PROVINCE | NOT NULL | VARCHAR2 (40) |
| COUNTRY_ID | NOT NULL | NUMBER |
| CUST_INCOME_LEVEL | | VARCHAR2 (30) |
| CUST_CREDIT_LIMIT | | NUMBER |
| CUST_EMAIL | | VARCHAR2 (30) |

You want to update the CUST_CREDIT_LIMIT column to NULL for all the customers, where CUST_INCOME_LEVEL has NULL in the CUSTOMERS table. Which SQL statement will accomplish the task?

A. UPDATE customers
SET cust_credit_limit = NULL
WHERE cust_income_level = NULL;
B. UPDATE customers
SET cust_credit_limit = NULL
WHERE cust_income_level IS NULL;
C. UPDATE customers
SET cust_credit_limit = TO_NUMBER(NULL)
WHERE cust_income_level = TO_NUMBER(NULL);
D. UPDATE customers

SET cust_credit_limit = TO_NUMBER(' ',9999)
WHERE cust_income_level IS NULL;

**Answer:** B

8. Examine the structure of the MARKS table:

| Name | Null? | Type |
|---|---|---|
| STUDENT_ID | NOT NULL | VARCHAR2(4) |
| STUDENT_NAME | | VARCHAR2(25) |
| SUBJECT1 | | NUMBER(3) |
| SUBJECT2 | | NUMBER(3) |
| SUBJECT3 | | NUMBER(3) |

Which two statements would execute successfully?

A. SELECT student_name, subject1 FROM marks
WHERE subject1 > AVG(subject1);

B. SELECT student_name,SUM(subject1) FROM marks
WHERE student_name LIKE 'R%';

C. SELECT SUM (subject1+subject2+subject3) FROM marks
WHERE student_name IS NULL

D. SELECT SUM (DISTINCT NVL(subject1,0)),MAX(subject1) FROM marks WHERE subject1 > subject2;

E. Both C and D

**Answer:** E

9. See the Exhibit

| Table PROMOTIONS | | |
|---|---|---|
| Name | Null? | Type |
| PROMO_ID | NOT NULL | NUMBER(6) |
| PROMO_NAME | NOT NULL | VARCHAR2(30) |
| PROMO_SUBCATEGORY | NOT NULL | VARCHAR2(30) |
| PROMO_SUBCATEGORY_ID | NOT NULL | NUMBER |
| PROMO_CATEGORY | NOT NULL | VARCHAR2(30) |
| PROMO_CATEGORY_ID | NOT NULL | NUMBER |
| PROMO_COST | NOT NULL | NUMBER(10,2) |
| PROMO_BEGIN_DATE | NOT NULL | DATE |
| PROMO_END_DATE | NOT NULL | DATE |

Using the PROMOTIONS table, you need to display the names of all promos done after January 1, 2001 starting with the latest promo. Which query would give the required result? (Choose all that apply.)

8. SELECT promo_name,promo_begin_date
FROM promotions
WHERE promo_begin_date > '01-JAN-01' ORDER BY 2 DESC;

9. SELECT promo_name,promo_begin_date
FROM promotions

WHERE promo_begin_date > '01-JAN-01' ORDER BY promo_name DESC;

e. SELECT promo_name,promo_begin_date
FROM promotions

WHERE promo_begin_date > '01-JAN-01' ORDER BY 1 DESC;

f. SELECT promo_name,promo_begin_date "START DATE"
FROM promotions
WHERE promo_begin_date > '01-JAN-01' ORDER BY "START DATE" DESC;

g. Both A and D

**Answer:** E

10. See the Exhibit:

| Table CUSTOMERS | | |
|---|---|---|
| Name | Null? | Type |
| CUST_ID | NOT NULL | NUMBER |
| CUST_FIRST_NAME | NOT NULL | VARCHAR2 (20) |
| CUST_LAST_NAME | NOT NULL | VARCHAR2 (40) |
| CUST_GENDER | NOT NULL | CHAR (1) |
| CUST_YEAR_OF_BIRTH | NOT NULL | NUMBER (4) |
| CUST_MARITIAL_STATUS | | VARCHAR2 (20) |
| CUST_STREET_ADDRESS | NOT NULL | VARCHAR2 (40) |
| CUST_POSTAL_CODE | NOT NULL | VARCHAR2 (10) |
| CUST_CITY | NOT NULL | VARCHAR2 (30) |
| CUST_STATE_PROVINCE | NOT NULL | VARCHAR2 (40) |
| COUNTRY_ID | NOT NULL | NUMBER |
| CUST_INCOME_LEVEL | | VARCHAR2 (30) |
| CUST_CREDIT_LIMIT | | NUMBER |
| CUST_EMAIL | | VARCHAR2 (30) |

NEW_CUSTOMERS is a new table with the columns CUST_ID, CUST_NAME and CUST_CITY that have the same data types and size as the corresponding columns in the CUSTOMERS table.

Evaluate the following INSERT SQL statement:

```
INSERT INTO new_customers (cust_id, cust_name, cust_city)
VALUES(SELECT cust_id,cust_first_name||' '||cust_last_name,cust_city
                FROM customers
                WHERE cust_id > 23004);
```

The INSERT statement fails when executed. What could be the reason?

A. The VALUES clause cannot be used in an INSERT with a subquery

B. Column names in the NEW_CUSTOMERS and CUSTOMERS tables do not match

C. The WHERE clause cannot be used in a subquery embedded in an INSERT statement

D. The total number of columns in the NEW_CUSTOMERS table does not match the total number of columns in the CUSTOMERS table

**Answer:** A

11. Evaluate these two SQL statements:

SELECT last_name, salary, hire_date FROM EMPLOYEES ORDER BY salary DESC;

SELECT last_name, salary, hire_date FROM EMPLOYEES ORDER BY 2 DESC;

What is true about them?

**A.** The two statements produce identical results.

**B.** The second statement returns a syntax error.

**C.** There is no need to specify DESC because the results are sorted in descending order by default.

**D.** The two statements can be made to produce identical results by adding a column alias for the salary column in the second SQL statement.

**Answer: A**

12. Where can sub queries be used? (Choose all that apply)

**A.** field names in the SELECT statement

**B.** the FROM clause in the SELECT statement

**C.** the HAVING clause in the SELECT statement

**D.** the GROUP BY clause in the SELECT statement

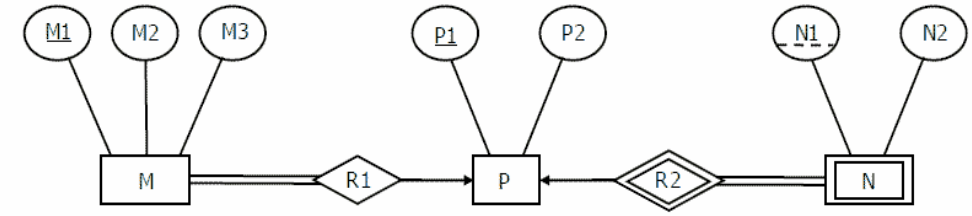
**E.** Options A, B

**F.** the WHERE clause in SELECT as well as all DML statements

G. Options A, B, C, F

**Answer: G**

13. Consider the following ER diagram.




The minimum number of tables needed to represent M, N, P, R1, R2 is
**(A)** 2
(B) 3
**(C)** 4
**(D)** 5

**Explanation:** Answer is B, i.e, 3 minimum tables.
M, P are strong entities hence they must be represented by separate tables.

14. EmployeeDetail (EmpId, FullName, ManagerID, DateOfJoining)

EmployeeSalary (EmpID, Project, Salary)

Consider the following relational query on the above database:

```
SELECT Salary

FROM EmployeeSalary Emp1

WHERE 2 = (

        SELECT COUNT( DISTINCT ( Emp2.Salary ) )

        FROM EmployeeSalary Emp2

        WHERE Emp2.Salary > Emp1.Salary

    )
```

Assume that relations corresponding to the above schema are not empty. Which one of the following is the correct interpretation of the above query?

a. find the highest salary from table

b. find the 2nd highest salary from table

**c. find the 3rd highest salary from table**

d. None of above

Answer-C

## 15. Which of the following are the features of PL/SQL.

- It offers extensive error checking
- It offers numerous data types.
- It offers a variety of programming structures.
- All of the mentioned

Answer-D

---

1) Which of the following factors indicates that a table is not well-structured?

a. It contains multiple foreign keys.
b. The primary key consists of more than one attribute.
c. The data in the table represents more than one entity.
d. Referential integrity is violated when attempting to enter data.

Answer-C

2) Which SQL command would you use to define the primary key for a new table called 'Employee' with the primary column to be 'empid'?

A: ADD TABLE Employee ADD PRIMARY KEY (empid)

B: ATTACH TABLE Employee ADD
PRIMARY KEY (empid)

C: ADD TABLE Employee ATTACH
PRIMARY KEY (empid)

D: ALTER TABLE Employee ADD PRIMARY
KEY (empid)

Answer-D

3) The 'NULL' represents

A: 0 B: blank space C: absence of any value D: none of the above

Answer-C

4) Which SQL keyword is used to sort the result?

A: ORDER B: SORT-ORDER C: SORT D: ORDER BY

Answer-D

5) To change the value of a customer's discount from 3 to 5, what command do we need to use:

e. INSERT b) SELECT c) DELETE d) UPDATE.

Answer-D

6) The WHERE keyword comes before the condition in a normal Select query. When using the command GROUP BY in the Select query, what keyword is used to start the condition section ?

A) Having B) Find C) Order D) Provide

Answer-A

7) The term first normal form (1NF) describes the tabular format in which (check only one)

a. all the key attributes are defined
b. there are no repeating groups in the table. Row/column intersection can contain one and only one value,
not a set of values.
c. all attributes are dependent on the primary key.
d. all of the above.

Answer-B

8) The referential integrity rule requires that (check only one) :

a. it makes it possible for an attribute to have a corresponding value.
b. every null foreign key value must reference an existing primary key value.
c. every non-null foreign key value must reference an existing primary key value
d. it makes it possible to delete a row in one table whose primary key does not have a matching foreign key value in another table.

Answer-A

9) A table that is in 2NF and contains no transitive dependencies is said to be in (check only one)

a. 1NF. b. 2NF. c. 3NF. d. 4NF.

Answer-C

10) An entity is in second normal form if:

A. all the values of nonprimary keys are dependent on the full primary key.
B. any nonkey attributes that are dependent on only part of the primary key should be moved to any entity where that partial key is the actual full key.
C. it must already be in first normal form.
D. all of the above.

Answer-D

11) A functional dependency is a relationship between or among:
A) Tables B) Relations C) Rows D) Attributes

Answer-D

12) The 2NF describes the tabular format in which:
13) A: there are no repeating groups in the table
B: all attributes are dependent on the primary key

C: A & B with no partial dependency

D: there is no partial dependency

Answer-D

14) The process of converting complex object data structures into well-structured relations is called:
b. object-relational modeling. b. normalization.
c. referential integrity. d. determinant analysis.

Answer-B

15) A relation is considered to be in second normal form if it is in first normal form and it has no _____ dependencies.
a. referential b. functional c. partial key d. transitive

Answer-C

```
15) 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)

Answer-B

1. .Consider the following two statements about database transaction schedules:

I. Strict two-phase locking protocol generates conflict serializable schedules that are also recoverable.

II. Timestamp-ordering concurrency control protocol with Thomas' Write Rule can generate view serializable schedules that are not conflict serializable.

Which of the above statements is/are TRUE?

A. Neither I nor II
B. I only
C. II only
**D. Both I and II**

**Ans. (d)**

2. A relational database contains two tables **Student and Performance** as shown below:

| Roll_no. | Student_name |
|---|---|
| 1 | Amit |
| 2 | Priya |
| 3 | Vinit |
| 4 | Rohan |
| 5 | Smita |

| Student Roll_no. | Student_code | Marks |
|---|---|---|
| **1** | A | 86 |
| 1 | B | 95 |
| 1 | C | 90 |
| 2 | A | 89 |
| 2 | C | 92 |
| 3 | C | 80 |

Consider the SQL query given below:

```
SELECT S.Student_name, sum(P.Marks)
FROM Student S, Performance P
WHERE P.Marks > 84
GROUP BY S.Student_name;
```

The number of rows returned by the above SQL query is _____.

**A. 5**
B. 11
C. 2
D. NONE OF ABOVE

**ANS. A**

**3.** Consider the following relational schemes for a library database: Book (**Title, Author, Catalog_no, Publisher, Year, Price) Collection (Title, Author, Catalog_no)** with in the following functional dependencies:

```
I. Title Author --> Catalog_no
II. Catalog_no --> Title, Author, Publisher, Year
III. Publisher Title Year --> Price
```

Assume {Author, Title} is the key for both schemes. Which of the following statements is true?

A. Both Book and Collection are in BCNF
B. Both Book and Collection are in 3NF only
**C. Book is in 2NF and Collection is in 3NF.**
D. Both Book and Collection are in 2NF only.

**ANS: C**

**4. Consider two transactions T1 and T2, and four schedules S1, S2, S3, S4 of T1 and T2 as given below:**
T1 = R1[X] W1[X] W1[Y]
T2 = R2[X] R2[Y] W2[Y]
S1 = R1[X] R2[X] R2[Y] W1[X] W1[Y] W2[Y]
S2 = R1[X] R2[X] R2[Y] W1[X] W2[Y] W1[Y]
S3 = R1[X] W1[X] R2[X] W1[Y] R2[Y] W2[Y]
S1 = R1[X] R2[Y]R2[X]W1[X] W1[Y] W2[Y]
**Which of the above schedules are conflict-serializable?**
(A) S1 and S2
**(B) S2 and S3**
(C) S3 only
(D) S4 only

Answer (B)

**5. Consider a relation scheme R = (A, B, C, D, E, H) on which the following functional dependencies hold: {A–>B, BC–> D, E–>C, D–>A}. What are the candidate keys of R?**
(a) AE, BE
(b) AE, BE, DE
(c) AEH, BEH, BCH
**(d) AEH, BEH, DEH**

Answer (d)

**6. The following functional dependencies are given:**

**AB → CD, AF → D, DE → F, C → G , F → E, G → A**

**Which one of the following options is false?**
(A)CF+ = {ACDEFG}
(B)BG+ = {ABCDG}
**(C)AF+ = {ACDEFG}**
(D)AB+ = {ABCDFG}

Answer (C)

**7. Consider the table employee(empId, name, department, salary) and the two queries Q1 ,Q2 below. Assuming that department 5 has more than one employee, and we want to find the employees who get higher salary than anyone in the department 5, which one of the statements is TRUE for any arbitrary employee table?**

```
Q1 : Select e.empId
     From employee e
     Where not exists
        (Select * From employee s where s.department = “5” and
                                        s.salary >=e.salary)
Q2 : Select e.empId
     From employee e
     Where e.salary > Any
    (Select distinct salary From employee s Where s.department = “5”)
```

**(A) Q1 is the correct query**
(B) Q2 is the correct query
(C) Both Q1 and Q2 produce the same answer.
(D) Neither Q1 nor Q2 is the correct query

Answer A

Create a table like this:

```
create table employee(empId int(50), name varchar(50), department int(50), salary
int(50));
insert into employee values (1, 'a', 4, 90);
insert into employee values (2, 'b', 5, 30);
insert into employee values (3, 'c', 5, 50);
insert into employee values (4, 'd', 5, 80);
insert into employee values (8, 'f', 7, 10);
```

Q1 returns 1 for the above table

Q2 returns empId of those employees who get salary more than the minimum salary offered in department 5. It returns 1,3,4 for the above table.
According the question the answer should be 1 for the above table.
**The question implies that the required employee must not be from department 5.**

8. Consider the table R with attributes A, B and C. The functional dependencies that

hold on R are : A → B, C → AB. Which of the following statements is/are True ? I. The decomposition of R into $R_1$(C, A) and $R_2$(A, B) is lossless. II. The decomposition of R into $R_1$(A, B) and $R_2$(B, C) is lossy.

a) Only I

b) Only II

**c) Both I and II**

d) Neither I nor II

**Answer c**

9. Examine the data in the ORD_ITEMS table:

| ORD_NO | ITEM_NO | QTY |
|---|---|---|
| 1 | 111 | 10 |
| 1 | 222 | 20 |
| 1 | 333 | 30 |
| 2 | 333 | 30 |
| 2 | 444 | 40 |
| 3 | 111 | 40 |

Evaluate the following query:

```
SQL>SELECT item_no, AVG(qty)
FROM ord_items
HAVING AVG(qty) > MIN(qty) * 2
GROUP BY item_no;
```

Which statement is true regarding the outcome of the above query?

**A.** It gives an error because the having clause should be specified after the group by clause.

**B.** It gives an error because all the aggregate functions used in the having clause must be specified in the select list.

**C. It displays the item nos with their average quantity where the average quantity is more than double the minimum quantity of that item in the table.**

**D.** It displays the item nos with their average quantity where the average quantity is more than double the overall minimum quantity of all the items in the table.

Answer: C

10 Which of the following gives a logical structure of the database graphically?
**a) Entity-relationship diagram**
b) Entity diagram
c) Database diagram
d) Architectural representation

ANS: a

11. We indicate roles in E-R diagrams by labeling the lines that connect _____ to _____
a) Diamond , diamond
b) Rectangle, diamond
c) Rectangle, rectangle
**d) Diamond, rectangle**

ANS: d

12. Examine the data in the ename and hiredate columns of the employees table:

```
EMPLOYEES

Name                 Null?     Type
-------------------- --------- --------------
EMPNO                NOT NULL  NUMBER(4)
ENAME                          VARCHAR2(10)
JOB                            VARCHAR2(9)
HIREDATE                       DATE
SAL                            NUMBER(7,2)
COMM                           NUMBER(7,2)
DEPTNO                         NUMBER(2)
```

```
ENAME      HIREDATE
---------- ---------
SMITH      17-DEC-80
ALLEN      20-FEB-81
WARD       22-FEB-81
```

You want to generate a list of user IDs as follows:

```
SQL>SELECT CONCAT(SUBSTR(INITCAP(ename),1,3), REPLACE(hiredate,'-')) "USERID"
FROM employees;
```

What is the outcome?

**A. It executes successfully and gives the correct output.**

**B.** It executes successfully but does not give the correct output.

**C.** It generates an error because the REPLACE function is not valid.

**D.** It generates an error because the SUBSTR function cannot be nested in the CONCAT function.

Answer: A

13. View the Exhibit and examine the data in the promotions table.

---

| PROMO_NAME | PROMO_CATEGORY | PROMO_COST | PROMO_BEGIN_DATE |
|---|---|---|---|
| NO PROMOTION # | NO PROMOTION | 0 | 01-JAN-99 |
| newspaper promotion #16-108 | newspaper | 200 | 23-DEC-00 |
| post promotion #20-232 | post | 300 | 25-SEP-98 |
| newspaper promotion #16-349 | newspaper | 400 | 10-JUL-98 |
| internet promotion #14-471 | internet | 600 | 26-FEB-00 |
| TV promotion #13-448 | TV | 1100 | 06-AUG-00 |
| internet promotion #25-86 | internet | 1400 | 20-SEP-98 |
| TV promotion #12-49 | TV | 1500 | 10-AUG-00 |
| post promotion #21-166 | post | 2000 | 25-SEP-98 |
| newspaper promotion #19-210 | newspaper | 2100 | 19-MAR-99 |
| post promotion #20-282 | post | 2300 | 06-DEC-00 |
| newspaper promotion #16-327 | newspaper | 2800 | 09-APR-99 |
| internet promotion #29-289 | internet | 3000 | 01-NOV-98 |
| TV promotion #12-252 | TV | 3100 | 20-JUN-98 |
| magazine promotion #26-258 | magazine | 3200 | 04-MAY-00 |

PROMO_BEGIN_DATE is stored in the default date format, dd-mon-rr.

You need to produce a report that provides the name, cost, and start date of all promos in the post category that were launched before January 1, 2000.

Which SQL statement would you use?

A)
```
SELECT promo_name, promo_cost, promo_begin_date
FROM promotions
WHERE promo_category = 'post' AND promo_begin_date < '01-01-00';
```

B)
```
SELECT promo_name, promo_cost, promo_begin_date
FROM promotions
WHERE promo_cost LIKE 'post%' AND promo_begin_date < '01-01-2000';
```

C)
```
SELECT promo_name, promo_cost, promo_begin_date
FROM promotions
WHERE promo_category LIKE 'P%' AND promo_begin_date < '1-JANUARY-00';
```

D)
```
SELECT promo_name, promo_cost, promo_begin_date
FROM promotions
```

**A.** Option A

**B.** Option B

**C.** Option C

**D. Option D**

Answer: D

14. Which normal form is a table in if it has no multi-valued attributes and no partial dependencies?
    **A.** First normal form
    **B.** Second normal form
    **C.** Third normal form
    **D.** Fourth normal form

    Answer: B

**15. Given the following relation instance.**

| x | y | z |
|---|---|---|
| 1 | 4 | 2 |
| 1 | 5 | 3 |
| 1 | 6 | 3 |
| 3 | 2 | 2 |

**Which of the following functional dependencies are satisfied by the instance?**
(a) XY -> Z and Z -> Y
**(b) YZ -> X and Y -> Z**
(c) YZ -> X and X -> Z
(d) XZ -> Y and Y -> X
**Answer:** (b)

---

- 1- Which statement adds a column called salary to the employees table having 100 rows, which cannot contain null?

A)
```
ALTER TABLE EMPLOYEES
ADD SALARY NUMBER(8,2) NOT NULL;
```

B)
```
ALTER TABLE EMPLOYEES
ADD SALARY NUMBER(8,2) DEFAULT NOT NULL;
```

C)
```
ALTER TABLE EMPLOYEES
ADD SALARY NUMBER(8,2) DEFAULT 0 NOT NULL;
```

D)
```
ALTER TABLE EMPLOYEES
ADD SALARY NUMBER(8,2) DEFAULT CONSTRAINT p_nn NOT NULL;
```

**A. Option A**

**B.** Option B

**C.** Option C

**D.** Option D

**Answer: A: Correct because the requirement is add salary with not null constraint only. Although, B will execute successfully but default constraint is not required.**

- 2- You issue the following command to alter the country column in the departments table:

```
SQL> ALTER TABLE departments
     MODIFY (country DEFAULT 'USA');
```

Which statement is true?

**A.** It produces an error because column definitions cannot be altered to add default values.

**B.** It executes successfully and all the rows that have a null value for the country column will be updated with the value 'USA'.

**C. It executes successfully. The modification to add the default value takes effect only from subsequent insertions to the table**.

**D.** It produces an error because the data type for the column is not specified.

Answer: **C**

- 3- Examine the structure of the customers table:

```
Name                 Null?          Type
-----------------    -----------    ------------
CUSTNO               NOT NULL       NUMBER(3)
CUSTNAME             NOT NULL       VARCHAR2(25)
CUSTADDRESS                         VARCHAR2(35)
CUST_CREDIT_LIMIT                   NUMBER(5)
```

CUSTNO is the primary key in the table. You want to find out if any customers' details have been entered more than once using different CUSTNO, by listing all the duplicate names.

Which two methods can you use to get the required result?

**A.** Self-join

**B.** Subquery

**C.** Left outer-join with self-join

**D. Both A and B**

Answer: **Correct D**

create table customer(

CUSTNO number primary key,

CUSTNAME varchar2(2))

insert into customer values (1,'A')

insert into customer values (2,'b')

insert into customer values (3,'A')

insert into customer values (4,'b')

insert into customer values (5,'A')

insert into customer values (6,'A')

insert into customer values(7,'C')

select distinct a.CUSTNAME from CUSTOMER a ,CUSTOMER b where a.CUSTNAME=b.CUSTNAME and a.CUSTNO!=b.CUSTNO

select distinct a.CUSTNAME from CUSTOMER a where exists(select 1 from CUSTOMER b where a.CUSTNAME=b.CUSTNAME and a.CUSTNO!=b.CUSTNO)

- View the Exhibit and examine the data in the products table.

| PROD_ID | PROD_NAME | PROD_CATEGORY | PROD_MIN_PRICE | PROD_UNIT_OF_MEASURE |
|---|---|---|---|---|
| 101 | Envoy 256MB - 40GB | Hardware | 6000 | Nos. |
| 102 | Y Box | Electronics | 9000 | |
| 103 | DVD-R Disc, 4.7 GB | Software/Other | 2000 | Nos. |
| 104 | Documentation Set - Spanish | Software/Other | 4000 | |

You need to display product names from the products table that belong to the 'software/other' category with minimum prices as either S2000 or S4000 and no unit of measure.

You issue the following query:

```
SQL>SELECT prod_name, prod_category, prod_min_price
    FROM products
    WHERE prod_category LIKE '%Other%' AND (prod_min_price = 2000 OR
              prod_min_price = 4000) AND prod_unit_of_measure <> '';
```

Which statement is true regarding the above query?

**A. It executes successfully but returns no result.**

**B.** It executes successfully and returns the required result.

**C.** It generates an error because the condition specified for PROD_UNIT_OF_MEASURE is not valid.

**D.** It generates an error because the condition specified for the prod category column is not valid.

Answer: A

- The customers table has the following structure

```
Name                          Null?        Type
-----------------------------------------------------
CUST_ID                        NOT NULL       NUMBER
CUST_FIRST_NAME                NOT NULL       VARCHAR2(20)
CUST_LAST_NAME                 NOT NULL       VARCHAR2(30)
CUST_INCOME_LEVEL                             VARCHAR2(30)
CUST_CREDIT_LIMIT                             NUMBER
```

A)
```
SELECT cust_first_name, cust_credit_limit * .05 AS TAX_AMOUNT
    FROM customers
    WHERE cust_income_level IS NOT NULL AND
          tax_amount IS NOT NULL;
```

B)
```
SELECT cust_first_name, cust_credit_limit * .05 AS TAX_AMOUNT
    FROM customers
    WHERE cust_income_level IS NOT NULL AND
          cust_credit_limit IS NOT NULL;
```

C)
```
SELECT cust_first_name, cust_credit_limit * .05 AS TAX_AMOUNT
    FROM customers
    WHERE cust_income_level <> NULL AND
          tax_amount <> NULL;
```

D)
```
SELECT cust_first_name, cust_credit_limit * .05 AS TAX_AMOUNT
    FROM customers
    WHERE (cust_income_level,tax_amount) IS NOT NULL;
```

A. Option A

**B. Option B**

**C.** Option C

**D.** Option D

Answer: B

- **Examine the description of the EMPLOYEES table:**

**EMP_ID NUMBER (4) NOT NULL**

**LAST_NAME VARCHAR2 (30) NOT NULL**

**FIRST_NAME VARCHAR2 (30)**

**DEPT_ID NUMBER (2)**

**JOB_CAT VARCHAR (30)**

**SALARY NUMBER (8, 2)**

**Which statement shows the department ID, minimum salary, and maximum salary paid in that department, only if the minimum salary is less than 5000 and maximum salary is more than 15000?**

A. SELECT dept_id, MIN (salary), MAX (salary) FROM employees WHERE MIN(salary) < 5000 AND MAX (salary) > 15000;

B. SELECT dept_id, MIN (salary), MAX (salary) FROM employees WHERE MIN (salary) < 5000 AND MAX (salary) 15000 GROUP BY dept_id;

C. SELECT dept_id, MIN(salary), MAX(salary) FROM employees HAVING MIN (salary) < 5000 AND MAX (salary)

**D. SELECT dept_id, MIN (salary), MAX (salary) FROM employees GROUP BY dept_id HAVING MIN(salary) < 5000 AND MAX (salary) > 15000**

ANS: D

7. **You would like to display the system date in the format "Monday, 01 June, 2001". Which SELECT statement should you use?**

A. SELECT TO_DATE (SYSDATE, 'FMDAY, DD Month, YYYY') FROM dual;

B. SELECT TO_CHAR (SYSDATE, 'FMDD, DY Month, YYYY') FROM dual;

**C. SELECT TO_CHAR (SYSDATE, 'FMDay, DD Month, YYYY') FROM dual;**

D. SELECT TO_CHAR (SYSDATE, 'FMDY, DDD Month, YYYY') FROM dual;

Ans: C

*format_mask* parameter begins with "FM"

**8. What is true about joining tables through an Equijoin?**

A. You can join a maximum of two tables through an Equijoin.
B. You can join a maximum of two columns through an Equijoin.
C. You specify an Equijoin condition in the SELECT or FROM clauses of a SELECT statement.
D. **You can join n tables (all having single column primary keys) in a SQL statement by specifying a minimum of n-1 join conditions**.

Ans. D

**9.** What is the value of customer_id within the nested block in the example below?

```
/* Start main block */
DECLARE
 customer_id NUMBER(9) := 678;
 credit_limit NUMBER(10,2) := 10000;
BEGIN
 /* Start nested block */
DECLARE
 customer_id VARCHAR2(9) := 'AP56';
 current_balance NUMBER(10,2) := 467.87;
BEGIN
-- what is the value of customer_id at this point?
  NULL;
 END;
END;
```

Please select the best answer.

A. 678
B. 10000
**C. AP56**
D. 467.87

Ans: C

10. Which of the following is used to store movie and image files?
a) Clob
b) **Blob**
c) Binary
d) Image

Answer:-B

11. In SQL the statement select * from R, S is equivalent to
a) Select * from R natural join S
b) **Select * from R cross join S**

c) Select * from R union join S
d) Select * from R inner join S

Answer:-B

12. Choose the correct option regarding the query

```
SELECT branch_name, COUNT (DISTINCT customer_name)
FROM depositor, account
WHERE depositor.account_number = account.account_number
       GROUP BY branch_id
       HAVING avg(balance) = 10000;
```

a) The having clause checks whether the query result is true or not
b) The having clause does not check for any condition
**c) The having clause allows only those tuples that have average balance 10000**
d) None of the mentioned

Answer:-C

13. How many relations can a delete command operate on?
a) 0
**b) 1**
c) 2
d) Infinitely many

Answer:-B

14. Choose the correct option regarding the following query

```
INSERT INTO course ('CS-67' , 'course name', 'any' , 5);
```

a) Data is inserted into the course relation
b) Data is not inserted into the course relation due to incorrect specification
c) Data is inserted into the CS-67 relation
**d) Data is not inserted due to the incorrect use of syntax**

Answer:-D

15. The join operations that do not retain mismatched tuples are called as _____ operations
a) outer join
**b) natural join**
c) full outer join
**d) inner join**

Correct B,D

# DBMS MCQ

1. What is the advantage of using union over union all?

(a)**Removes duplicates** (b) Ignore nulls (c) add readability (d) none of the above

Answer:-A

2. Which of the following is not an aggregate function?

(a) Sum (b) count (c)avg (d)**abs**

Answer:-D

2. Which DDL command is used to delete all the data from the table but preserving the structure?

(a) Drop (b) Delete (c) Alter (d) **Truncate**

Answer:-D

3. Select name, contact from emp where dno= (Select dno from dept where dname='EC')

Which of the following field may be used as a foreign key in the above database context?

(a) Name (b) contact (c) **dno** (d)dname

Answer:-C

4. What is the output of substr('Language',6):

(a)Lang (b) guage (c)uage (d)**age**

Answer:-D

5. The combination of arithmetic operators used to show not equal to condition is:

(a)=, < (b)>,! (c)!,* (d)**<,>**

Answer:-D

8. How many sub queries can be included at max in a sql query?

(a)1 (b) 3 (c) **any no. Of** (d)5

Answer:-C

6. The attribute *name* could be structured as an attribute consisting of first name, middle initial, and last name. This type of attribute is called
a) Simple attribute
b) **Composite attribute**
c) Multi valued attribute
d) Derived attribute

Answer:-B

7. In SQL the statement select * from R, S is equivalent to
a) Select * from R natural join S
b) **Select * from R cross join S**

c) Select * from R union join S
d) Select * from R inner join S

Answer:-B

8. Which of the following is used to store movie and image files?
a) Clob
b) **Blob**
c) Binary
d) Image

Answer:-B

9. Which of the following is not a property of transactions?
a) Atomicity
b) **Concurrency**
c) Isolation
d) Durability

Answer:-**B**

10. Which of the following creates a virtual relation for storing the query?
a) Function
b) **View**
c) Procedure
d) None of the mentioned

Answer:-B

11. Choose the correct option regarding the query

```
SELECT branch_name, COUNT (DISTINCT customer_name)
FROM depositor, account
WHERE depositor.account_number = account.account_number
       GROUP BY branch_id
       HAVING avg(balance) = 10000;
```

a) The having clause checks whether the query result is true or not
b) The having clause does not check for any condition
c) The having clause allows only those tuples that have average balance 10000
d) None of the mentioned

Answer:-C

12. How many relations can a delete command operate on?
a) 0
b) 1
c) 2
d) Infinitely many

Answer:-B

13. Choose the correct option regarding the following query

```
INSERT INTO course ('CS-67' , 'course name', 'any' , 5);
```

a) Data is inserted into the course relation
b) Data is not inserted into the course relation due to incorrect specification
c) Data is inserted into the CS-67 relation
d) Data is not inserted due to the incorrect use of syntax

Answer:-D

14. The join operations that do not retain mismatched tuples are called as _____ operations
a) outer join
b) natural join
c) full outer join
d) inner join

Answer:-D

15. Create view student select ID, address, name from student;

What is the result of the above query?
a) It creates a view named student with 3 attributes
b) It creates a view named student with 1 attribute
c) It creates a view named ID with 2 attributes
d) It is syntactically wrong and does not give a result

Answer:-D

---

1. Concurrency control is important for which of the following reasons?

a. To ensure data integrity when updates occur to the database in a multiuser environment
b. To ensure data integrity when updates occur to the database in a single-user environment
c. To ensure data integrity while reading data occurs to the database in a multiuser environment
d. To ensure data integrity while reading data occurs to the database in a single-user environment

Answer D

2. Consider the relation "enrolled(student, course)" in which (student, course) is the primary key, and the relation "paid(student, amount)" where student is the primary key. Assume no null values and no foreign keys or integrity constraints. Given the following four queries:

```
Query1: select student from enrolled where
        student in (select student from paid)
Query2: select student from paid where
        student in (select student from enrolled)
Query3: select E.student from enrolled E, paid P
         where E.student = P.student
Query4:  select student from paid where exists
        (select * from enrolled where enrolled.student
         = paid.student)
```

Which one of the following statements is correct?

a. All queries return identical row sets for any database

b. Query2 and Query4 return identical row sets for all databases but there exist databases for which Query1 and Query2 return different row sets.

c. There exist databases for which Query3 returns strictly fewer rows than Query2

d. There exist databases for which Query4 will encounter an integrity violation at runtime.

Answer B

3. Given relations r(w, x) and s(y, z), the result of

```
SELECT DISTINCT w, x
       FROM r, s
```

is guaranteed to be same as r, provided

a. r has no duplicates and s is non-empty

b. r and s have no duplicates

c. s has no duplicates and r is non-empty

d. r and s have the same number of tuples

Answer A

4. In SQL, relations can contain null values, and comparisons with null values are treated as unknown. Suppose all comparisons with a null value are treated as false. Which of the following pairs is not equivalent?

a. x = 5 AND not(not(x = 5))

b. x = 5 AND x> 4 and x < 6, where x is an integer

c. x ≠ 5 AND not (x = 5)

d. None of the above

Answer C

5. Consider the following Employee table

```
ID   salary   DeptName
1    10000      EC
2    40000      EC
3    30000      CS
4    40000      ME
5    50000      ME
6    60000      ME
7    70000      CS
```

How many rows are there in the result of following query?

```
SELECT E.ID
FROM  Employee E
WHERE  EXISTS  (SELECT E2.salary
                FROM Employee E2
                WHERE E2.DeptName = 'CS'
                AND   E.salary > E2.salary)
```

a. 0

b. 4

c. 5

d. 6

Answer C

6.

Students

| Roll No | Student Name |
|---|---|
| 1 | Raj |
| 2 | Rohit |
| 3 | Raj |

Performance

| Roll No | Course | Marks |
|---|---|---|
| 1 | Math | 80 |
| 1 | English | 70 |
| 2 | Math | 75 |
| 3 | English | 80 |
| 2 | Physics | 65 |
| 3 | Math | 80 |

following relations:

```
SELECT S. Student_Name, sum(P.Marks)
     FROM Student S, Performance P
     WHERE S.Roll_No = P.Roll_No
     GROUP BY S.Student_Name
```

The number of rows that will be returned by the SQL query is _____

0

1

2

3

Answer C

7. Which of the following is true? I. Implementation of self-join is possible in SQL with table alias. II. Outer-join operation is basic operation in relational algebra. III. Natural join and outer join operations are equivalent.

a. I and II are correct.

b. II and III are correct.

c. Only III is correct.

d. Only I is correct.

Answer d

**8) The following table has two attributes A and C where A is the primary key and C is the foreign key referencing A with on-delete cascade.**

| A | C |
|---|---|
| 2 | 4 |
| 3 | 4 |
| 4 | 3 |
| 5 | 2 |
| 7 | 2 |
| 9 | 5 |
| 6 | 4 |

**The set of all tuples that must be additionally deleted to preserve referential integrity when the tuple (2,4) is deleted is:**

(a) (3,4) and (6,4)
(b) (5,2) and (7,2)
(c) (5,2), (7,2) and (9,5)
(d) (3,4), (4,3) and (6,4)
Answer (C)

**9. Given the following relation instance.**

| x | y | z |
|---|---|---|
| 1 | 4 | 2 |
| 1 | 5 | 3 |
| 1 | 6 | 3 |
| 3 | 2 | 2 |

**Which of the following functional dependencies are satisfied by the instance? (GATE CS 2000)**

(a) XY -> Z and Z -> Y
(b) YZ -> X and Y -> Z
(c) YZ -> X and X -> Z
(d) XZ -> Y and Y -> X

**Answer:** (b)

**10) Consider the following schedules involving two transactions. Which one of the following statements is TRUE?**

$$S_1 : r_1(X); r_1(Y); r_2(X); r_2(Y); w_2(Y); w_1(X)$$

$$S_2 : r_1(X); r_2(X); r_2(Y); w_2(Y); r_1(Y); w_1(X)$$

(A) Both S1 and S2 are conflict serializable.
(B) S1 is conflict serializable and S2 is not conflict serializable.
(C) S1 is not conflict serializable and S2 is conflict serializable.
(D) Both S1 and S2 are not conflict serializable.

Answer (C)

**11) Which of the following functional dependencies hold for relations R(A, B, C) and S(B, D, E):**
**B → A,**
**A → C**
**The relation R contains 200 tuples and the rel ation S contains 100 tuples. What is the**
**maximum number of tuples possible in the natural join R◊◊S (R natural join S)**

(A) 100
(B) 200
(D) 300
(D) 2000
Answer (A)

**12) The following functional dependencies are given:**

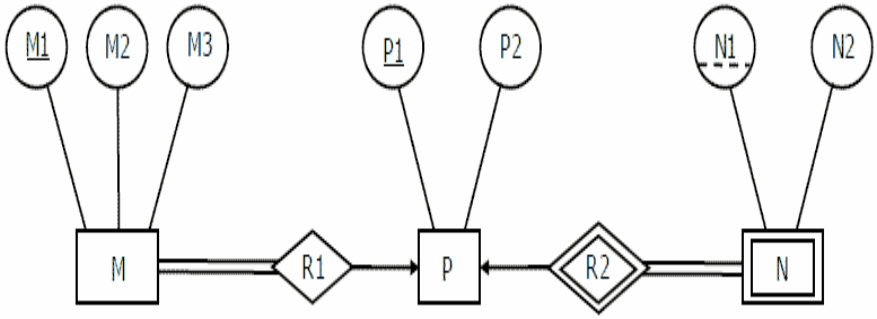
**AB → CD, AF → D, DE → F, C → G , F → E, G → A**

**Which one of the following options is false?**

(A)CF+ = {ACDEFG}

(B)BG+ = {ABCDG}
(C)AF+ = {ACDEFG}
(D)AB+ = {ABCDFG}
Answer (C, D)

13. Consider the data given in above question. Which of the following is a correct attribute set for one of the tables for the correct answer to the above




question?

| |
|---|
| A-{M1, M2, M3, P1} |
| B-{M1, P1, N1, N2} |
| C-{ M1, P1, N1 } |
| D-{M1, P1} |

Answer (A)

14. Which of the following is the preferred way to recover a database after a system failure?

a. Rollback

b. Rollforward

c. Switch to duplicate database

d. Reprocess transactions

Answer: c

15. What SQL command will allow you to change the table STUDENT to add the constraint named GradeCheck that states that the values of the Grade column must be greater than 0?

a. ALTER TABLE STUDENT ALTER CONSTRAINT GradeCheck (Grade > 0);

b. ALTER TABLE STUDENT ADD CONSTRAINT GradeCheck (Grade > 0);

c. ALTER TABLE STUDENT ADD CONSTRAINT GradeCheck CHECK (Grade > 0);

d. None of the above is correct.

Answer: c

---

1. Table employee has 10 records. It has a non-NULL SALARY column which is also UNIQUE.
   The SQL statement
   SELECT COUNT(*) FROM employee WHERE SALARY > ALL (SELECT SALARY FROM EMPLOYEE);
   prints

A. 10

B. 9

C. 5

D. 0

ANS D

**2.** Which of the following is true ?
I. Implementation of self-join is possible in SQL with table alias.
II. Outer-join operation is basic operation in relational algebra.
III. Natural join and outer join operations are equivalent.
**(A)** I and II are correct.
**(B)** II and III are correct.
**(C)** Only III is correct.
**(D)** Only I is correct.

**Answer: (D)**

3. Consider a relation book (title, price) which contains the titles and prices of different books. Assuming that no two books have the same price, what does the following SQL query list ?

```
Select title
from book as B
where (select count ( * )
from book as T
where T.price > B.price) < 7
```

**(A)** Titles of the six most expensive books.
**(B)** Title of the sixth most expensive books.
**(C)** Titles of the seven most expensive books.
**(D)** Title of the seventh most expensive books.

**Answer: (C)**

4. Consider the following tables :

**Table:** Employee

| EmpId | EmpName | MangaerId | DeptId | Salary | DOB |
|---|---|---|---|---|---|
| 11 | Ram | 0 | 1 | 40000 | 01/01/1991 |
| 12 | Murali | 0 | 2 | 35000 | 21/02/1987 |
| 13 | Tarang | 1 | 1 | 30000 | 25/08/1989 |
| 15 | Lisa | 2 | 2 | 42000 | 31/05/1992 |
| 27 | Fatima | 2 | 1 | 39000 | 17/04/1990 |

**Table:** Department

| DeptId | DeptName |
|---|---|
| 1 | IT |
| 2 | Admin |

What will be the output of following SQL query ?

```
SELECT * FROM EMPLOYEE E
WHERE 2 = (SELECT COUNT(DISTINCT E1.SALARY)
FROM EMPLOYEE E1
WHERE E1.SALARY>E.SALARY)
```

**(A)** Second highest salary
**(B)** Two distinct salary of employees
**(C)** Third highest salary
**(D)** Employee with second highest salary

**Answer: (C)**

5. Consider the following two tables and four queries in SQL.

Book (isbn, bname), Stock (isbn, copies)
Query 1:

```
SELECT B.isbn, S.copies
FROM Book B INNER JOIN Stock S
ON B.isbn = S.isbn;
```

Query 2:

```
SELECT B.isbn, S.copies
FROM B B LEFT OUTER JOIN Stock S
ON B.isbn = S.isbn;
```

Query 3:

```
SELECT B.isbn, S.copies
FROM Book B RIGHT OUTER JOIN Stock S
ON B.isbn = S.isbn;
```

Query 4:

```
SELECT B.isbn, S.copies
FROM B B FULL OUTER JOIN Stock S
ON B.isbn = S.isbn;
```

Which one of the queries above is certain to have an output that is a superset of the outputs of the other three queries?
**(A)** Query 1
**(B)** Query 2
**(C)** Query 3
**(D)** Query 4

**Answer: (D)**

6. Consider the schema
Sailors(sid, sname, rating, age) with the following data

| SID | SNAME | RATING | AGE |
|---|---|---|---|
| 22 | Dustin | 7 | 45 |
| 29 | Borg | 1 | 33 |
| 31 | Pathy | 8 | 55 |
| 32 | Robert | 8 | 25 |
| 58 | Raghu | 10 | 17 |
| 64 | Herald | 7 | 35 |
| 71 | Vishnu | 10 | 16 |
| 74 | King | 9 | 35 |
| 85 | Archer | 3 | 26 |
| 84 | Bob | 3 | 64 |
| 96 | Flinch | 3 | 17 |

For the query

```
SELECT S.rating, AVG(S.age) AS avgage FROM Sailors S
Where S.age >= 18
GROUP BY S.rating
HAVING 1 < (SELECT COUNT(*) FROM Sailors S2 where S.rating = S2.rating)
```

The number of rows returned is
**(A)** 6
**(B)** 5
**(C)** 4
**(D)** 3

**Answer: (D)**

7. Below Query using Case Expression is:

```
UPDATE Customer
SET State_Code = CASE State_Code
 WHEN 'CDG' THEN 'CHANDIGARH'
 WHEN 'NDG' THEN 'NEW DELHI'
 WHEN 'RJS' THEN 'RAJASTHAN'
 ELSE NULL
 END
```

A) Valid
B) Invalid

**Answer: (A)**

## 8. A developer would like to use referential datatype declaration on a variable. The variable name is EMPLOYEE_LASTNAME, and the corresponding table and column is EMPLOYEE, and LNAME, respectively. How would the developer define this variable using referential datatypes?

A. Use employee.lname%type.

B. Use employee.lname%rowtype.

C. Look up datatype for EMPLOYEE column on LASTNAME table and use that.

D. Declare it to be type LONG.

Ans: A

## 9. Which identifier is valid?

A. customer_12

B. loop

C. customer@orgA

D. 12customer

Ans: A

**10. The || is is an example of what function**

**SELECT last_name || ', ' || first_name || ' ' || middle_name**

**FROM employees;**

A. Incantination

B. Integration

C. Continuation

D. Concatenation

E. None of the above

ANS: D

11. You attempt to query the database with this command:

```
SELECT nvl (100 / quantity, NONE)
   FROM inventory;
```

Why does this statement cause an error when QUANTITY values are null?
a) The expression attempts to divide by a null value
b) The data types in the conversion function are incompatible
c) The character string none should be enclosed in single quotes (‘ ‘)
d) A null value used in an expression cannot be converted to an actual value

ANS: A

12. The result of _____unknown is unknown.
a) Xor
b) Or
c) And
d) Not

Answer: d

13. Which of the following deletes all tuples in the instructor relation for those instructors associated with a department located in the Watson building which is in department relation.

a)

```
DELETE FROM instructor
WHERE dept_name IN 'Watson';
```

b)

```
DELETE FROM department
WHERE building='Watson';
```

c)

```
DELETE FROM instructor
WHERE dept_name IN (SELECT dept name
                    FROM department
```

```
                    WHERE building = 'Watson');
```

d)None

Answer: c

14. Which of the following relation updates all instructors with salary over $100,000 receive a 3 percent raise, whereas all others receive a 5 percent raise.

a)

```
UPDATE instructor
SET salary = salary * 1.03
WHERE salary > 100000;
UPDATE instructor
SET salary = salary * 1.05
WHERE salary <= 100000;
```

b)

```
UPDATE instructor
SET salary = salary * 1.05
WHERE salary < (SELECT avg (salary)
FROM instructor);
```

c)

```
UPDATE instructor
SET salary = CASE
WHEN salary <= 100000 THEN salary * 1.03
ELSE salary * 1.05
END
```

d) None of the mentioned

Answer: a

15..`SELECT *`

```
FROM student JOIN takes USING (ID);
```

The above query is equivalent to

a)

```
SELECT *
FROM student INNER JOIN takes USING (ID);
```

b)

```
SELECT *
FROM student OUTER JOIN takes USING (ID);
```

c)

```
SELECT *
```

```
   FROM student LEFT OUTER JOIN takes USING (ID);
```

d) None of the mentioned

Answer: a

---

***1. Consider a relation office with the following schema;***

***Office(Cabin_no, Room_no, Phone)***

***Room number is unique. Each room consists of approximately 20 cabins and each cabin number is unique with respect to room number. The same cabin number may be used in different rooms. Each room has unique phone number.***

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

a) Room_no is a candidate key

b) Phone is a candidate key

c) (Cabin_no, Phone) and (Cabin_no, Room_no) are the candidate keys.

d) (Room_no, Phone) and (Room_no, Cabin_no) are the candidate keys.

Answer C

***2. Consider the following schema of relation R;***

***R (A, B, C)***

***Attributes A, B, and C are all unique valued attributes. Which of the following is TRUE for R?***

a) A is a candidate key for R

b) B is a candidate key for R

c) (A, C) is a super key for R

d) all of the above

**Answer:**

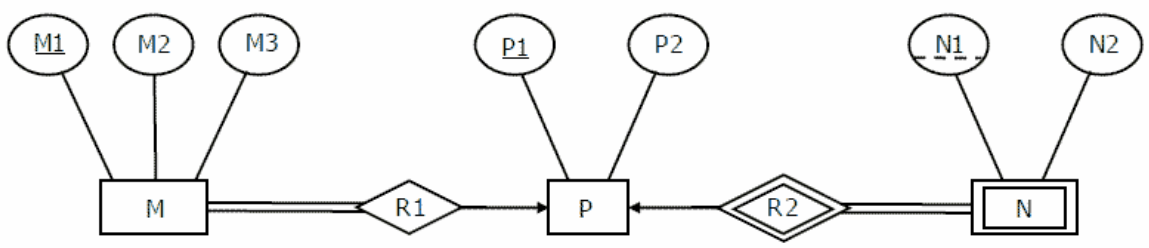
**d) all of the above**

## 3. For a relation R(A, B, C), if A → B and A → C holds, then A → BC also holds. Which of the following rule ensures this?

(a) Augmentation rule
(b) Union rule
(c) Decomposition rule
(d) None of the above

**Answer:**
**(b) Union rule**

4. Consider the following ER diagram.




The minimum number of tables needed to represent M, N, P, R1, R2 is

a. 2

b. 3

c. 4

d. 5

Answer b

Q5) Which of the following is not an integrity constraint?
a) Not null
b) Positive
c) Unique
d) Check 'predicate'

Answer b

6)

```
CREATE TABLE course
( . . .
```

```
FOREIGN KEY (dept name) REFERENCES department
. . . );
```

Which of the following is used to delete the entries in the referenced table when the tuple is deleted in course table?

a) Delete

b) Delete cascade

c) Set null

d) All of the mentioned

Answer b

7) If you were collecting and storing information about your music collection, an album would be considered a(n) _____

a) Relation

b) Entity

c) Instance

d) Attribute

Answer b

8. Evaluate the following query:
SQL> SELECT TRUNC(ROUND(156.00,-1),-1) FROM DUAL;
What would be the outcome?
A. 16
B. 155
C. 157
D. 160

**Answer: D**

9. Where can subqueries be used?
1. field names in the SELECT statement
2. the FROM clause in the SELECT statement
3. the HAVING clause in the SELECT statement
4. the GROUP BY clause in the SELECT statement
5. the WHERE clause in only the SELECT statement
6. the WHERE clause in SELECT as well as all DML statements

A. 1, 2
B. 1, 3, 6
C. 1, 2, 3, 6
D. 1, 2, 6

**Answer: C**

10. You created an ORDERS table with the following description:

| Name | Null | Type |
|---|---|---|
| ORD_ID | NOT NULL | NUMBER(2) |
| CUST_ID | NOT NULL | NUMBER(3) |
| ORD_DATE | NOT NULL | DATE |
| ORD_AMOUNT | NOT NULL | NUMBER (10,2) |

You inserted some rows in the table. After some time, you want to alter the table by creating the PRIMARY KEY constraint on the ORD_ID column.

Which statement is true in this scenario?
A. You cannot have two constraints on one column.
B. You cannot add a primary key constraint if data exists in the column.
C. The primary key constraint can be created only at the time of table creation.
D. You can add primary key constraint even if data exists, provided that there are no duplicate values.
**Answer: D**

11. You need to extract details of those products in the SALES table where the PROD_ID column contains the string '_D123'. Which WHERE clause could be used in the SELECT statement to get the required output?
A. WHERE prod_id LIKE '%_D123%' ESCAPE '_'
B. WHERE prod_id LIKE '%_D123%' ESCAPE '\'
C. WHERE prod_id LIKE '%_D123%' ESCAPE '%_'
D. WHERE prod_id LIKE '%_D123%' ESCAPE '_'

**12. Examine the description of the EMPLOYEES table:**

EMP_ID NUMBER(4) NOT NULL

LAST_NAME VARCHAR2(30) NOT NULL
FIRST_NAME VARCHAR2(30)
DEPT_ID NUMBER(2)
JOB_CAT VARCHARD2(30)
SALARY NUMBER(8,2)
**Which statement shows the maximum salary paid in each job category of each department?**
A. SELECT dept_id, job_cat, MAX(salary)
FROM employees
WHERE salary > MAX(salary);
B. SELECT dept_id, job_cat, MAX(salary)
FROM employees
GROUP BY dept_id, job_cat;
C. SELECT dept_id, job_cat, MAX(salary)
FROM employees;
D. SELECT dept_id, job_cat, MAX(salary)
FROM employees
GROUP BY dept_id;
E. SELECT dept_id, job_cat, MAX(salary)
FROM employees

GROUP BY dept_id, job_cat, salary;
**Answer: B**

**13)**

**Management has asked you to calculate the value 12*salary* commission_pct for all the employees in the EMP table. The EMP table contains these columns:**
LAST NAME VARCNAR2(35) NOT NULL

SALARY NUMBER(9,2) NOT NULL
COMMISION_PCT NUMBER(4,2)
**Which statement ensures that a value is displayed in the calculated columns for all employees?**
**A.** SELECT last_name, 12*salary*** commission_pct**
FROM emp;
B. SELECT last_name, 12*salary* (commission_pct,0)
FROM emp;
C. SELECT last_name, 12*salary*(nvl(commission_pct,0))
FROM emp;
D. SELECT last_name, 12*salary*(decode(commission_pct,0))
FROM emp;
**Answer: C**

14)

**Examine the description of the STUDENTS table:**
STD_ID NUMBER(4)
COURSE_ID VARCHARD2(10)
START_DATE DATE
END_DATE DATE
**Which two aggregate functions are valid on the START_DATE column?**
A. SUM(start_date)
B. AVG(start_date)
C. COUNT(start_date)
D. AVG(start_date, end_date)
**Answer: C,**
**Explanation:**
It is possible to apply COUNT() and MIN() functions on the column with DATE data type.

**15**
**What does the TRUNCATE statement do?**
A. Removes the table
B. Removes all rows from a table
C. Shortens the table to 10 rows
D. Removes all columns from a table
E. Removes foreign keys from a table
**Answer: B**

Q.1 - Consider the following schema −

```
STUDENTS(student_code,first_name,last_name, email,
phone_no,date_of_birth,honours_subject,percentage_of_marks);
```

Which query will display the names and honours subjects of all students and if a student has not yet been given ahonours subject yet, then it should display ‘No Honours Yet’.

A - selectfirst_name, last name, nvl(honours_subject, ‘No Honours Yet’) from students;

B - selectfirst_name, last name, nvl2(honours_subject, ‘No Honours Yet’) from students;

C - selectfirst_name, last name, honours_subject, from students;

D - selectfirst_name, last name, nullif(honours_subject, ‘No Honours Yet’) from students;

ANSWER A

Q 2 - Consider the following schema −

```
STUDENTS(student_code,first_name,last_name, email,
phone_no,date_of_birth,honours_subject,percentage_of_marks);
```

Which of the following query would correctly display the students’ first name, last name, honours subject and date of birth, born between July 1st 1996, and 30th June 1999.

A - selectfirst_name, last name, honours_subject, date_of_birth from students where date_of_birth between ’30-JUN-1999’ and ’01-JUL-1996’;

B - selectfirst_name, last name, honours_subject, date_of_birth from students where date_of_birth in (’30-JUN-1999’ , ’01-JUL-1996’);

C - selectfirst_name, last name, honours_subject, date_of_birth from students where date_of_birth like ’30-JUN-1999’ and ’01-JUL-1996’;

D - selectfirst_name, last name, honours_subject, date_of_birth from students where date_of_birth between ’01-JUL-1996’ and ’30-JUN-1999’;

ANSWER D

Q 3 - Which of the following is not true about single row functions?

A - They operate on single rows only and return one result per row.

B - They accept arguments that could be a column or any expression.

C - They cannot be nested.

D - They may modify the data type.

ANSWER C

Q4 - Which of the following is not a character manipulation function?

A - concat

B - substr

C - instr

D - coalesce

ANSWER D

Q 5 - What is returned by INSTR('TUTORIALS PPOINT', 'P')?

A - 11

B- 2

C - PPOINT

D- 12

ANSWER A

Q 6 - What is returned by SUBSTR('TUTORIALS POINT', 1, 9)?

A - TUTORIAL

B- T S

C - TUTORIALS

D - UTORIALS

ANSWER C

Q 7 - What is returned by SUBSTR('TUTORIALS POINT', -1, 1)?

A - T

B - NULL

C - 0

D - N

ANSWER A

Q 8- Which of the following is/are true with reference to 'view' in DBMS ? (a) A 'view' is a special stored procedure executed when certain event occurs. (b) A 'view' is a virtual table, which occurs after executing a pre-compiled query. code:

A – TRUE A

B – FALSE A

C - Both TRUE

D - Both FALSE

ANSWER B

| Employee | Department | OT_allowance |
|---|---|---|
| RAMA | Mechanical | 5000 |
| GOPI | Electrical | 2000 |
| SINDHU | Computer | 4000 |
| MAHESH | Civil | 1500 |

Q 9-

output of the following SQL query?

```
select count(*) from ((select Employee, Department from
Overtime_allowance) as S natural join (select Department, OT_allowance
from Overtime_allowance) as T);
```

A- 16

B- 4

C- 8

D- NONE

ANSWER B

Q-10 Consider the set of relations given below and the SQL query that follows

```
Students : (Roll number, Name, Date of birth)

Courses: (Course number, Course name, instructor)

Grades: (Roll number, Course number, Grade)

SELECT DISTINCT Name

FROM Students, Courses, Grades

WHERE Students.Roll_number = Grades.Roll_number

       AND Courses.Instructor =Sriram AND Grades.Grade = A

       AND Courses.Course_number = Grades.Course_number
```

Which of the following sets is computed by the above query?

A- Names of Students who have got an A grade in all courses taught by Sriram
B- Names of Students who have got an A grade in all courses
C- Names of Students who have got an A grade in at least one of the courses taught by Sriram

D- None of the above

ANSWER C

Q-11 Consider the following three table to store student enrollements in different courses.

```
Student(EnrollNo, Name)
Course(CourseID, Name)
EnrollMents(EnrollNo, CourseID)
```

What does the following query do?

```
SELECT S.Name

FROM Student S, Course C, Enrollments E

WHERE S.EnrollNo = E.EnrollNo AND

      C.Name = "DBMS" AND

      E.CourseID = C.CourseID AND

      S.EnrollNo IN

        (SELECT S2.EnrollNo

         FROM Student S2, Course C2, Enrollments E2

         WHERE S2.EnrollNo = E2.EnrollNo AND

               E2.CourseID = C2.CourseID

               C2.Name = "OS")
```

A- Name of all students who are either enrolled in "DBMS" or "OS" courses
B- Name of all students who are enrolled in "DBMS" and "OS"
C- Name of all students who are either enrolled in "DBMS" or "OS" or both.

D- NONE

ANSWER B

12. The number of tuples in a relation is called its ……. While the number of attributes in a relation is called it's ……..
A) Degree, Cardinality
B) Cardinality, Degree
C) Rows, Columns
D) Columns, Rows

Answer-B

13. ..... is the process of organizing data into related tables.
A) Normalization
B) Generalization
C) Specialization
D) None of the above

Answer-A

14) Which are the two ways in which entities can participate in a relationship?
A. Passive and active
B. Total and partial
C. Simple and Complex
D. All of the above

Answer-B

15) The language that requires a user to specify the data to be retrieved without specifying exactly how to get it is
A. Procedural DML
B. Non-Procedural DML
C. Procedural DDL
D. Non-Procedural DDL

Answer-B

---

- What is the cardinality of table with 1000 rows and 100 column?
    a) 10
    b) 100
    c) 1000
    d) None of these

ANS: c

- Examine the structure of the products table:

```
Name          Null?       Type
------------------------------------
PROD_ID       NOT NULL    NUMBER(4)
PROD_NAME                 VARCHAR2(20)
PROD_STATUS               VARCHAR2(6)
QTY_IN_HAND               NUMBER(8,2)
UNIT_PRICE                NUMBER(10,2)
```

You want to display the names of the products that have the highest total value for UNIT_PRICE * QTY_IN_HAND.

Which SQL statement gives the required output?

---

```
A) SELECT prod_name
   FROM products
   WHERE (unit_price * qty_in_hand) = (SELECT MAX(unit_price * qty_in_hand)
   FROM products);

B) SELECT prod_name
   FROM products
   WHERE (unit_price * qty_in_hand) = (SELECT MAX(unit_price * qty_in_hand)
   FROM products
   GROUP BY prod_name);

C) SELECT prod_name
   FROM products
   GROUP BY prod_name
   HAVING MAX(unit_price * qty_in_hand) = (SELECT MAX(unit_price * qty_in_hand)
   FROM products
   GROUP BY prod_name);


D) SELECT prod_name
   FROM products
   WHERE (unit_price * qty_in_hand) = (SELECT MAX(SUM(unit_price * qty_in_hand))
   FROM products)
   GROUP BY prod_name;
```

**A.** Option A

**B.** Option B

**C.** Option C

**D.** Option D

**Answer: A**

- You need to produce a report where each customer's credit limit has been incremented by $1000. In the output, the customer's last name should have the heading Name and the incremented credit limit should be labeled New credit Limit. The column headings should have only the first letter of each word in uppercase.

Which statement would accomplish this requirement?

---

```
A) SELECT cust_last_name Name, cust_credit_limit + 1000
      "New Credit Limit"
   FROM customers;

B) SELECT cust_last_name AS Name, cust_credit_limit + 1000
      AS New Credit Limit
   FROM customers;

C) SELECT cust_last_name AS "Name", cust_credit_limit + 1000
      AS "New Credit Limit"
   FROM customers;

D) SELECT INITCAP(cust_last_name) "Name", cust_credit_limit + 1000
      INITCAP("NEW CREDIT LIMIT")
   FROM customers;
```

**A.** Option A

**B.** Option B

**C.** Option C

**D.** Option D

Answer: C

- View the Exhibit and examine the data in the costs table:

COSTS

| PROD_ID | PROMO_ID | UNIT_COST | UNIT_PRICE |
|---|---|---|---|
| 14 | 111 | 900 | 1129 |
| 15 | 333 | 875 | 1075 |
| 16 | 333 | 700 | 900 |
| 17 | 444 | 1000 | 1150 |

You need to generate a report that displays the IDs of all products in the costs table whose unit price is at least 25% more than the unit cost. The details should be displayed in the descending order of 25% of the unit cost.

You issue the following query:

```
SQL>SELECT prod_id
FROM costs
WHERE unit_price >= unit_cost * 1.25
ORDER BY unit_cost * 0.25 DESC;
```

Which statement is true regarding the above query?

**A.** It executes and produces the required result.

**B.** It produces an error because an expression cannot be used in the order by clause.

**C.** It produces an error because the DESC option cannot be used with an expression in the order by clause.

**D.** It produces an error because the expression in the ORDER by clause should also be specified in the SELECT clause.

Answer: A

- View the Exhibit and examine the structure of the products table

| Table PRODUCTS | | |
|---|---|---|
| Name | Null? | Type |
| PROD_ID | NOT NULL | NUMBER(6) |
| PROD_NAME | NOT NULL | VARCHAR2(50) |
| PROD_DESC | NOT NULL | VARCHAR2(4000) |
| PROD_CATEGORY | NOT NULL | VARCHAR2(50) |
| PROD_CATEGORY_ID | NOT NULL | NUMBER |
| PROD_UNIT_OF_MEASURE | | VARCHAR2(20) |

Evaluate the following query:

```
SQL> SELECT prod_name
FROM products
WHERE prod_id IN (SELECT prod_id FROM products
                  WHERE prod_list_price =
                        (SELECT MAX(prod_list_price)FROM products
                         WHERE prod_list_price <
                               (SELECT MAX(prod_list_price)FROM products)));
```

What would be the outcome of executing the above SQL statement?

**A.** It produces an error.

**B.** It shows the names of all products in the table.

**C.** It shows the names of products whose list price is the second highest in the table.

**D.** It shows the names of all products whose list price is less than the maximum list price.

Answer: C

- You issued the following command:
  SQL> DROP TABLE employees;
  Which three statements are true?
  **A.** All uncommitted transactions are committed.
  **B.** All indexes and constraints defined on the table being dropped are also dropped.
  **C.** The space used by the employees table is reclaimed immediately.
  **D.** Options A, C
  Answer: B

- Examine the create table statements for the stores and sales tables.
  SQL> CREATE TABLE stores(store_id NUMBER(4) CONSTRAINT store_id_pk PRIMARY KEY, store_name VARCHAR2(12), store_address VARCHAR2(20), start_date DATE);
  SQL> CREATE TABLE sales(sales_id NUMBER(4) CONSTRAINT sales_id_pk PRIMARY KEY, item_id NUMBER(4), quantity NUMBER(10),

sales_date DATE, store_id NUMBER(4), CONSTRAINT store_id_fk FOREIGN KEY(store_id) REFERENCES stores(store_id));
You executed the following statement:
SQL> DELETE from stores
WHERE store_id=900;
The statement fails due to the integrity constraint error:
ORA-02292: integrity constraint (HR.STORE_ID_FK) violated
Which three options ensure that the statement will execute successfully?
**A.** Disable the primary key in the STORES table.
**B.** Use CASCADE keyword with DELETE statement.
**C.** DELETE the rows with STORE_ID = 900 from the SALES table and then delete rows from STORES table.
**D.** Disable the FOREIGN KEY in SALES table and then delete the rows.
**E.** Options A, C, D
Answer: E

- Relation R has eight attributes ABCDEFGH. Fields of R contain only atomic values. F = {CH -> G, A -> BC, B -> CFH, E -> A, F -> EG} is a set of functional dependencies (FDs) so that F+ is exactly the set of FDs that hold for R. How many candidate keys does the relation R have?

**A.** 3

**B.** 4

**C.** 5

**D.** 6

Answer: B

- Which of the following is **TRUE**?
  **(A)** Every relation in 3NF is also in BCNF
  **(B)** A relation R is in 3NF if every non-prime attribute of R is fully functionally dependent on every key of R
  **(C)** Every relation in BCNF is also in 3NF
  **(D)** No relation can be in both BCNF and 3NF

  **Answer: (C)**

10. Consider a relational table with a single record for each registered student with the following attributes.

1. *Registration_Num*: Unique registration number of each registered student
2. *UID*: Unique identity number, unique at the national level for each citizen

3. *BankAccount_Num*: Unique account number at the bank. A student can have multiple accounts or join accounts. This attribute stores the primary account number.
4. *Name*: Name of the student
5. *Hostel_Room*: Room number of the hostel

Which one of the following option is **INCORRECT**?
**(A)** BankAccount_Num is candidate key
**(B)** Registration_Num can be a primary key
**(C)** UID is candidate key if all students are from the same country
**(D)** If S is a superkey such that S∩UID is NULL then S∪UID is also a superkey

**Answer: (A)**

11.. Consider the following relational schema:

**Suppliers(sid:integer, sname:string, city:string, street:string)**
**Parts(pid:integer, pname:string, color:string)**
**Catalog(sid:integer, pid:integer, cost:real)**

Assume that, in the suppliers relation above, each supplier and each street within a city has a unique name, and (sname, city) forms a candidate key. No other functional dependencies are implied other than those implied by primary and candidate keys. Which one of the following is TRUE about the above schema?
**(A)** The schema is in BCNF
**(B)** The schema is in 3NF but not in BCNF
**(C)** The schema is in 2NF but not in 3NF
**(D)** The schema is not in 2NF

**Answer: (A)**

12. Consider the relation scheme R = {E, F, G, H, I, J, K, L, M, M} and the set of functional dependencies {{E, F} -> {G}, {F} -> {I, J}, {E, H} -> {K, L}, K -> {M}, L -> {N} on R. What is the key for R?
**(A)** {E, F}
**(B)** {E, F, H}
**(C)** {E, F, H, K, L}
**(D)** {E}

**Answer: (B)**

13. The maximum number of super keys for the relation schema R(E,F,G,H) with E as the key is
**(A)** 5
**(B)** 6
**(C)** 7
**(D)** 8

**Answer: (D)**

14. Consider a relation scheme R = (A, B, C, D, E, H) on which the following functional dependencies hold: {A–>B, BC–>D, E–>C, D–>A}. What are the candidate keys of R?
**(A)** AE, BE
**(B)** AE, BE, DE
**(C)** AEH, BEH, BCH
**(D)** AEH, BEH, DEH

**Answer: (D)**

**15.** The relation scheme Student Performance (name, courseNo, rollNo, grade) has the following functional dependencies:

```
name, courseNo → grade

rollNo, courseNo → grade

name → rollNo

rollNo → name
```

The highest normal form of this relation scheme is
**(A)** 2 NF
**(B)** 3 NF
**(C)** BCNF
**(D)** 4NF

**Answer: (B)**

---

# DBMS MCQ

Q1) can use the following three rules to find logically implied functional dependencies. This collection of rules is called
a) Axioms
b) Armstrong's axioms
c) Armstrong
d) Closure

2. Relational databases store structured data while Big Data stores data in any format. Most of real world data is of which type?

(a) Hierarchical (b) Relational (c) **Big data** (d)Cloud

Ans c

3. Index can be created on multiple attributes as well which is called as:

(a)Primary Index (b)Complex Index (c)Cluster Index (d) **Composite Index**

Ans d

4) Suppose relation R(A,B) currently has tuples {(1,2), (1,3), (3,4)} and relation S(B,C) currently has {(2,5), (4,6), (7,8)}. Then the number of tuples in the result of the SQL query:

```
SELECT*
        FROM R NATURALOUTERJOIN S;
```

a) 2

b) 4

c) 6

d) None of the mentioned

Ans: A

5. Which one of the following depicts the property of transaction that, it must be performed completely or nor performed at all?

(a) **Atomicity** (b) Durability (c) Consistency(d) Isolation

Ans A

6.Consider two statements about outer and inner queries in context of SQL sub-queries?

i. The inner queries can get data from only one table

ii. The inner queries can get data from more than one table

Which of the above statements are true?

A. (i)
**B. (ii)**
C. Both (i) and (ii)
D. Neither (i) nor (ii)

Ans b

7. The value of 'age' filed can be calculated by using 'date-of-birth' field. This type of attribute is called
a) Simple attribute
b) Composite attribute
c) Multi valued attribute
d) **Derived attribute**

Ans d

8. This property express the number of entities to which another entity can be associated in a relationship:
a) Degree
b) **Cardinality**
c) Redundancy
d) Anomaly

Ans b

9. Which of the following statements creates a new table temp instructor that has the same schema as an instructor with no data.
a) create table temp_instructor as select * from instructor;
b) **Create table temp_instructoras select * from instructor where 1=2;**
c) Create Table as temp_instructor;
d) Create table like temp_instructor;

Ans b

10: In a large DBMS

a. each user can "see" only a small part of the entire database

b. each subschema contains every field in the logical schema

c. each user can access every subschema

d. all of the above

Answer: a

11) Functional Dependencies are the types of constraints that are based on_____

a) Key

b) Key revisited

c) Superset key

d) None of the mentioned

Ans A

12) Which prefixes are available to Oracle triggers?
a) : new only
b) : old only
c) Both :new and : old
d) Neither :new nor : old

Ans: c

13) What are the after triggers?
a) Triggers generated after a particular operation
b) These triggers run after an insert, update or delete on a table
c) These triggers run after an insert, views, update or delete on a table
d) All of the mentioned

Ans: b

15: The ascending order of a data hierarchy is:

a. bit-byte-record-field-file-database

b. byte-bit-field-record-file-database

c. bit-byte-field-record-file-database

d. bit-byte-file-record-field-database

Answer: c

**11. Select invalid variable types**

A. CHAR
**B. VARCHAR1**
C. VARCHAR2
D. INTEGER

Answer-B

12. Which of the following keyword is used with Data Control Language (DCL) statements?

- **A.** SELECT
- **B.** INSERT
- **C.** DELETE
- **D.** GRANT

Answer-D

13. A type of query that is placed within a WHERE or HAVING clause of another query is called

- **A.** Master query
- **B.** Sub query
- **C.** Super query
- **D.** Multi-query

Answer-B

14. A command that lets you change one or more fields in a record is

- **A.** Insert
- **B.** Modify
- **C.** Look-up
- **D.** All of the Mentioned

Answer-B

**15. Which of the following is a Data Model?**

A. Entity-Relationship model
B. Relational data model
C. Object-Based data model
D. All of the above

Answer-D

16. **The column header is referred to as**

A. Table
B. Relation
C. Attributes
D. Domain

Answer-C

**17.A SQL query automatically eliminates duplicates (True / False) ?**

A. TRUE

B. FALSE

Answer-B

18.Which of the following is a comparison operator in SQL?

A. Double equal sign ( == )

B. LIKE

C. BETWEEN

D. Single equal sign ( = )

Answer-A

9. Which function is used to divides one numeric expression by another and get the remainder ?

A. POWER

B. MOD

C. ROUND

D. REMAINDER

Answer-B

10. The virtual table that its created by data from the result of an SQL 'Select' statement is called _____

A. View

B. Synonym

C. Sequence

D. Transaction

Answer-A

**11. The DROP TABLE statement:**

**a. deletes the table structure only.**

**b. deletes the table structure along with the table data.**

**c. works whether or not referential integrity constraints would be violated.**

**d. is not an SQL statement.**

Answer-B

12. SQL views can be used to hide:

a. columns and rows only.

b. complicated SQL syntax only.

c. both of the above can be hidden by an SQL view.

d. None of the above is correct.

Answer-C

**13.Which of the following is NOT a type of SQL constraint?**

**a.PRIMARY KEY**

**b.FOREIGN KEY**

**c.ALTERNATE KEY**

**d. UNIQUE**

Answer-C

**14. What is an SQL virtual table that is constructed from other tables?**

**a. Just another table**

**b. A view**

**c. A relation**

**d. Query results**

Answer-B

**15. When using the SQL INSERT statement:**

**A .rows can be modified according to criteria only.**

**b. rows cannot be copied in mass from one table to another only.**

**c. rows can be inserted into a table only one at a time only.**

**d. rows can either be inserted into a table one at a time or in groups.**

Answer-D

---

DBMS MCQ

1. Display **EmployeeId** and **EmployeeName** of those employees where their **Company** is 'Wipro' or 'Datamane'.
The EmployeeId should display only the *numeric value* of the EmployeeId. for example e101 should be displayed as 101.?

(a) **Select substr(Empid,2),Ename from emp where company_name in('Wipro','Datamane')**

(b) Select Empid,Ename from emp where company_name='Wipro','Datamane'

(c) Select Ename,Empid from emp where company_name='Wipro' or company_name='Datamane'

(d) none of the above

Ans A

2. Relational databases store structured data while Big Data stores data in any format. Most of real world data is of which type?

(a) Hierarchical (b) Relational (c) **Big data** (d)Cloud

Ans c

3. Index can be created on multiple attributes as well which is called as:

(a)Primary Index (b) Complex Index (c) Cluster Index (d) **Composite Index**

Ans d

4. Which DDL command is used to delete all the data from the table but preserving the structure?

(a) Drop (b) Delete (c) Alter (d) **Truncate**

Ans d

5. A functional dependency is a relationship between or among:

(a) Tables (b) Records (c) **Attributes** (d)Entities

Ans c

6. What is the purpose of second normal form?

(a) Remove duplicates (**b) Removes partial dependency**
(c)Split composite attributes (d)Removes transitive dependency

Ans b

7. Which one of the following depicts the property of transaction that, it must be performed completely or nor performed at all?

(a) **Atomicity** (b) Durability (c) Consistency (d) Isolation

Ans A

8. Consider two statements about outer and inner queries in context of SQL sub-queries?

i. The inner queries can get data from only one table

ii. The inner queries can get data from more than one table

Which of the above statements are true?

A. (i)
**B. (ii)**
C. Both (i) and (ii)
D. Neither (i) nor (ii)

Ans b

9. The value of 'age' filed can be calculated by using 'date-of-birth' field. This type of attribute is called
a) Simple attribute
b) Composite attribute
c) Multi valued attribute
d) **Derived attribute**

Ans d

10. This property express the number of entities to which another entity can be associated in a relationship:
a) Degree
b) **Cardinality**
c) Redundancy
d) Anomaly

Ans b

11. Which of the following statements creates a new table temp instructor that has the same schema as an instructor with no data.
a) create table temp_instructor as select * from instructor;
b) **Create table temp_instructor as select * from instructor where 1=2;**
c) Create Table as temp_instructor;
d) Create table like temp_instructor;

Ans b

12. Which of the following is a DCL command?
a) Create
b) **Grant, Revoke**

c) Commit, Rollback
d) None of the mentioned

Ans b

13. Which of the following makes the transaction permanent in the database?

a) View

b) Commit

c) Rollback

d) Flashback

Ans: B

14) Which of the following statements contains an error?

a) Select * from emp where empid = 10003;

b) Select empid from emp where empid = 10006;

c) Select empid from emp;

d) Select empid where empid = 1009 and lastname = 'GELLER';

Ans: d

15) Functional Dependencies are the types of constraints that are based on_____

a) Key

b) Key revisited

c) Superset key

d) None of the mentioned

Ans A

---

- View the Exhibits and examine products and sales tables.

| Table PRODUCTS | | |
|---|---|---|
| Name | Null? | Type |
| PROD_ID | NOT NULL | NUMBER(6) |
| PROD_NAME | NOT NULL | VARCHAR2(50) |
| PROD_DESC | NOT NULL | VARCHAR2(4000) |
| PROD_CATEGORY | NOT NULL | VARCHAR2(50) |
| PROD_CATEGORY_ID | NOT NULL | NUMBER |
| PROD_UNIT_OF_MEASURE | | VARCHAR2(20) |
| SUPPLIER_ID | NOT NULL | NUMBER(6) |
| PROD_STATUS | NOT NULL | VARCHAR2(20) |
| PROD_LIST_PRICE | NOT NULL | NUMBER(8,2) |
| PROD_MIN_PRICE | NOT NULL | NUMBER(8,2) |

| Table SALES | | |
|---|---|---|
| Name | Null? | Type |

You issue the following query to display product name and the number of times the product has been sold:

```
SQL>SELECT p.prod_name, i.item_cnt
    FROM (SELECT  prod_id, COUNT(*) item_cnt
                FROM sales
                GROUP BY prod_id) i RIGHT OUTER JOIN  products p
    ON  i.prod_id  = p.prod_id;
```

What happens when the above statement is executed?

**A.** The statement executes successfully and produces the required output.

**B.** The statement produces an error because item_cnt cannot be displayed in the outerquery.

**C.** The statement produces an error because a subquery in the from clause and outer-joinscannot be used together.

**D.** The statement produces an error because the group by clause cannot be used in asubquery in the from clause.

**Answer: A**

- Examine the types and examples of relationships that follow:

1. One-to-one a) Teacher to students
2. One-to-many b) Employees to Manager
3. Many-to-one c) Person to SSN

4. Many-to-many d) Customers to products

Which option indicates the correctly matched relationships?

**A.** 1-a, 2-b, 3-c, and 4-d

**B.** 1-c, 2-d, 3-a, and 4-b
**C.** 1-c, 2-a, 3-b, and 4-d
**D.** 1-d, 2-b, 3-a, and 4-c

**Answer: C**

- ..... is used to define code that is executed / fired when certain actions or event occur.

A Cursor
B Trigger
C Keywords
D Replace

Answer: B

4. . A pilot can fly three types of planes and a plane can be piloted by any qualified pilot. The pilot-plane type relationship is
(a) N:3
(b) 3:N
(c) 1:3
(d) 3:1

Answer: A

5. . Which of the SQL query is legal?
a) SELECT deptno, count(deptno) FROM emp GROUP BY ename;
b) SELECT deptno, count(deptno), job FROM emp GROUP BY deptno;
c) SELECT deptno, avg(sal) FROM emp;
d) SELECT deptno, avg(sal) FROM emp GROUP BY deptno;

Answer: D

6. What will be appropriate SQL Query to find the name of cities with temperature and condition whose condition is neither sunny nor cloudy
a) SELECT city, temperature, condition FROM weather WHERE condition NOT IN ('sunny', 'cloudy')
b) SELECT city, temperature, condition FROM weather WHERE condition NOT BETWEEN ('sunny', 'cloudy')
c) SELECT city, temperature, condition FROM weather WHERE condition IN ('sunny', 'cloudy')
d) SELECT city, temperature, condition FROM weather WHERE condition BETWEEN ('sunny', 'cloudy')

Answer: A

7. Which of the following is true about the execution section of a PL/SQL block?
a) It is enclosed between the keywords BEGIN and END.

b) It is a mandatory section.
c) It consists of the executable PL/SQL statements.
d) All of the above.

Answer: D

8. The pre-defined exception NO_DATA_FOUND is raised when
a) A null object is automatically assigned a value.
b) A SELECT INTO statement returns no rows.
c) PL/SQL has an internal problem.
d) PL/SQL ran out of memory or memory was corrupted.

Answer: B

9. Which of the following is the syntax for views where v is view name?
a) Create view v as “query name”;
b) Create “query expression” as view;
c) Create view v as “query expression”;
d) Create view “query expression”;

Answer:C

10.Which are the two ways in which entities can participate in a relationship?

(A)Passive and active (B)**Total and Partial** (C)Simplex and Complex (D)All of the above

Answer: B

11 - Which of the following is not true about SQL statements?

A - SQL statements are not case sensitive.

B - SQL statements can be written on one or more lines.

C - Keywords cannot be split across lines.

D - Clauses must be written on separate lines.
Answer D

12 - Consider the following schema −

```
STUDENTS(student_code, first_name, last_name, email,
        phone_no, date_of_birth, honours_subject, percentage_of_marks);
```

Which of the following query would display all the students where the second letter in the first name is ‘i’?

A - select first_name from students where first_name like ‘_i%’;

B - select first_name from students where first_name like '%i_';

C - select first_name from students where first_name like '%i%';

D - select first_name from students where first_name like '_i_';

Answer A

13 - Consider the following schema −

```
STUDENTS(student_code, first_name, last_name, email,
      phone_no, date_of_birth, honours_subject, percentage_of_marks);
```

Which of the following query would display names of all the students whose email ids are not provided?

A - select first_name, last name from students where email = 0;

B - select first_name, last name from students where email = ' ';

C - select first_name, last name from students where email is null;

D - select first_name, last name from students where email = 'null';

Answer C

14 - Which of the following is true about Cartesian Products?

A - A Cartesian product is formed when a join condition is omitted.

B - A Cartesian product is formed when a join condition is valid.

C - Some rows in the first table are joined to all rows in the second table.

D - All rows in the first table are joined to some rows in the second table.

Answer A

**15. Which of the following is not a database model**

A. Network Database Model
B. Relational Database Model
C. Object Oriented Database Model
D. None

Answer : Option **D**

1. An advantage of the database management approach is
a) Data is dependent on programs.
b) Data redundancy increases.
c) Data is integrated and can be accessed by multiple programs.
d) None of the above.

Answer: C

2. Which one of the following is used to define the structure of the relation, deleting relations and relating schemas?
a) DML(Data Manipulation Language)
b) DDL(Data Definition Language)
c) Query
d) Relational Schema

Answer: B

3. Aggregate functions can be used in the select list or the_____clause of a select statement or subquery. They cannot be used in a _____ clause.
a) Where, having
b) Having, where
c) Group by, having
d) Group by, where

Answer: B

4. Data integrity constraints are used to:
a) Control who is allowed access to the data
b) Ensure that duplicate records are not entered into the table
c) Improve the quality of data entered for a specific property (i.e., table column)
d) Prevent users from changing the values stored in the table
Answer: C

5. Updating the value of the view
a) Will affect the relation from which it is defined
b) Will not change the view definition
c) Will not affect the relation from which it is defined
d) Cannot determine
Answer: A

6. A stored procedure in SQL is a_____.
a) Block of functions
b) Group of Transact-SQL statements compiled into a single execution plan.
c) Group of distinct SQL statements.
d) None of mentioned

Answer: B

7. Which of the following options is true regarding the NATURAL JOIN in Oracle DB?

a. While using NATURAL JOIN mentioning the names of all the columns from both the tables is mandatory
b. NATURAL JOIN can be used only if the names of all the columns of both the tables are identical
c. The join in NATURAL JOIN happens only when the user specifies the columns of the source and the target tables.
d. There is no need to mention the columns when using NATURAL JOINS.

Answer: D

8. Which group functions ignore NULL values?
a) MAX, COUNT
b) COUNT, SUM
c) MAX, SUM
d) MAX, COUNT, SUM

Answer: D

9. Which of the following statements contains an error?
a) Select * from emp where empid = 10003;
b) Select empid from emp where empid = 10006;
c) Select empid from emp;
d) Select empid where empid = 1009 and lastname = 'GELLER';

Answer:D

10. The _____ clause allows us to select only those rows in the result relation of the ____ clause that satisfy a specified predicate.
a) Where, from
b) From, select
c) Select, from
d) From, where

Answer: A

11. Which of the following is not an integrity constraint?
a) Not null
b) Positive
c) Unique
d) Check 'predicate'

Answer: B

12. `CREATETABLE Manager(ID NUMERIC,Name VARCHAR(20),budget NUMERIC,Details VARCHAR(30));`

Inorder to ensure that the value of budget is non-negative which of the following should be used?

a)Check(budget>0)

b)Check(budget<0)

c)Alter(budget>0)

d) Alter(budget<0)

Answer: A

13. The _____ is essentially used to search for patterns in target string.
a) Like Predicate
b) Null Predicate
c) In Predicate
d) Out Predicate

Answer: A

14. _____ is a special type of integrity constraint that relates two relations & maintains consistency across the relations.
a) Entity Integrity Constraints
b) Referential Integrity Constraints
c) Domain Integrity Constraints
d) Domain Constraints

Answer: B

15. The overall description of a database is called_____.

A. Data integrity

B. Data manipulation

C. Database schema

D. Data definition

Answer:C

---

1. View the Exhibit for the structure of the student and faculty tables.

```
Name                  Null?           Type
--------------------- -------- ------------------------------
 STUDENT_ID           NOT NULL        NUMBER(2)
 STUDENT_NAME                         VARCHAR2(20)
 FACULTY_ID                           VARCHAR2(2)
 LOCATION_ID                          NUMBER(2)

FACULTY
Name                  Null?           Type
--------------------- -------- ------------------------------
 FACULTY_ID           NOT NULL        NUMBER(2)
 FACULTY_NAME                         VARCHAR2(20)
 LOCATION_ID                          NUMBER(2)
```

You need to display the faculty name followed by the number of students handled by the faculty at the base location.

Examine the following two SQL statements:

Statement 1

```
SQL>SELECT faculty_name,COUNT(student_id)
    FROM student JOIN faculty
    USING (faculty_id, location_id)
    GROUP BY faculty_name;
```

Statement 2

```
SQL>SELECT faculty_name,COUNT(student_id)
    FROM student NATURAL JOIN faculty
    GROUP BY faculty_name;
```

**A.** Only statement 1 executes successfully and gives the required result.

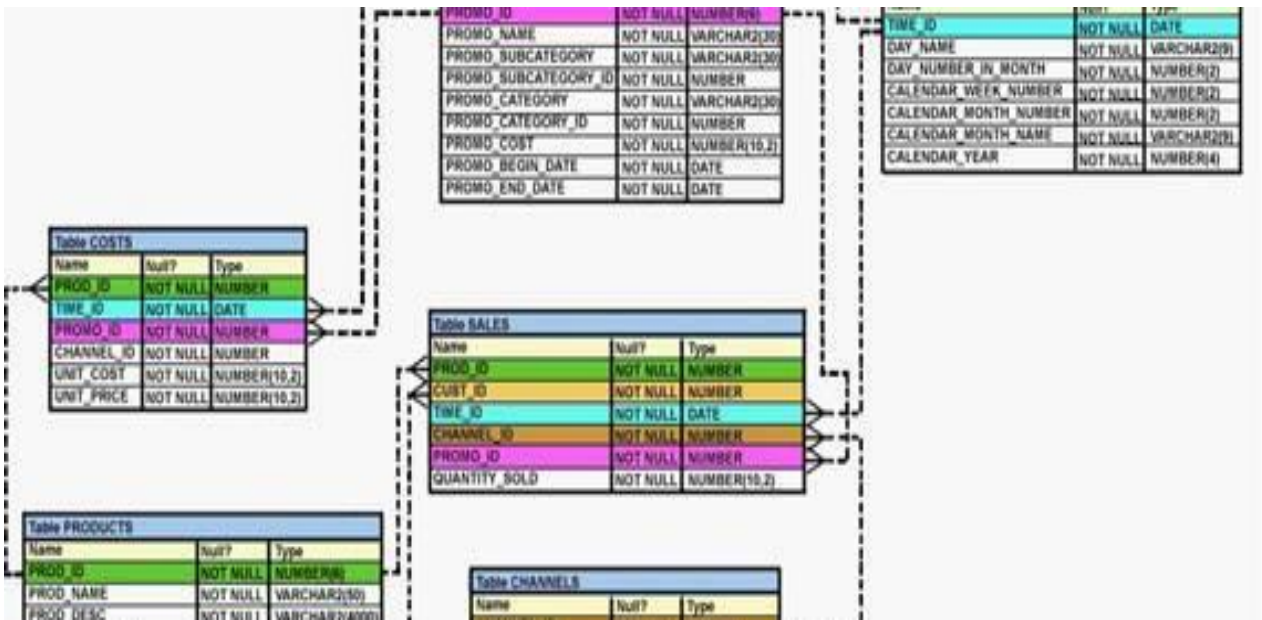
**B.** Only statement 2 executes successfully and gives the required result.

**C.** Both statements 1 and 2 execute successfully and give different results.

**D.** Both statements 1 and 2 execute successfully and give the same required result.

**Answer: D**

2. See the Exhibit



You want to create a SALE_PROD view by executing the following SQL statements:

```
CREATE VIEW sale_prod
AS SELECT p.prod_id, cust_id, SUM(quantity_sold) "Quantity", SUM(prod_list_price) "Price"
    FROM products p, sales s
    WHERE p.prod_id=s.prod_id
    GROUP BY p.prod_id, cust_id;
```

Which statement is true regarding the execution of the above statement?

A. The view will be created and you can perform DLM operations on the view

B. The view will be created but no DML operations will be allowed on the view

C. The view will not be created because the join statements are not allowed for creating a view

D. The view will not be created because the GROUP BY clause is not allowed for creating a view

**Answer:** B

3. An instance of relational schema R (A, B, C) has distinct values of A including NULL values. Which one of the following is true?

a) is a candidate key
b) A is not a candidate key
c) A is a primary Key
d) Both (A) and (C)

ANS: b

4. You execute the following commands:

```
SQL> SELECT employee_id, first_name,salary
     FROM employees
     WHERE hire_date > '&hiredate'
     AND manager_id > &mgr_id;
```

For which substitution variables are you prompted for the input?

**A.** None, because no input required

**B.** Both the substitution variables 'hiredate' and 'mgr_id'

**C.** Only 'hiredate'

**D.** Only 'mgr_id'

**Answer: B**

**5.** View the Exhibit and examine the data in the employees table:

```
EMPLOYEES
EMPLOYEE_ID EMPLOYEE_NAME MANAGER_ID SALARY    DEPTNO
----------- ----------    ---------- --------  -------
7369        SMITH            7902       800     20
77698       ALLEN                      1600     30
7902        WARD                       1250     30
7654        MARTIN           7698      1250     30
```

You want to display all the employee names and their corresponding manager names.

Evaluate the following query:

```
SQL> SELECT e.employee_name "EMP NAME", m.employee_name "MGR NAME"
FROM employees e _____ employees m
ON e.manager_id = m.employee_id;
```

Which join option can be used in the blank in the above query to get the required output?

**A.** INNER JOIN

**B.** FULL OUTER JOIN

**C.** LEFT OUTER JOIN

**D.** RIGHT OUTER JOIN

**Answer: C**

**6. Which of the following single-row operators can be used for writing a sub-query?**

A. >=
B. <
C. =
D. All of the above

**Answer: D.**

**7.You need to find the salaries for all the employees who have a higher salary than the Vice President of a company 'ABC'.Which of the following queries will give you the required result? (Consider the table structure as given)**

```
SQL> DESC employees

Name                      Null?    Type

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

 EMPLOYEE_ID              NOT NULL NUMBER(6)

 FIRST_NAME                        VARCHAR2(20)

 LAST_NAME                NOT NULL VARCHAR2(25)

 EMAIL                    NOT NULL VARCHAR2(25)
```

```
 PHONE_NUMBER                      VARCHAR2(20)
 HIRE_DATE               NOT NULL DATE
JOB_ID    NOT NULL VARCHAR2(10)
 SALARY          NUMBER(8,2)
 COMMISSION_PCT  NUMBER(2,2)
 MANAGER_ID       NUMBER(6)
 DEPARTMENT_ID     NUMBER(4)
```

(a)

```
SELECT first_name, last_name, salary
FROM employees
WHERE salary >(SELECT salary
FROM employees
WHERE job_id ='VICE-PRESIDENT');
```

(b)

```
SELECT first_name, last_name, salary
FROM employees
WHERE salary =(SELECT salary
FROM employees
WHERE job_id ='VICE-PRESIDENT');
```

(c)

```
SELECT first_name, last_name, salary
FROM employees
WHERE job_id ='VICE-PRESIDENT');
```

D. None of the above

**Answer: A.**

## 8. What will be the outcome of the following query? (Choose the most appropriate answer)

```
SQL> DESC employees

Name                      Null?    Type

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

 EMPLOYEE_ID              NOT NULL NUMBER(6)

 FIRST_NAME                        VARCHAR2(20)

 LAST_NAME                NOT NULL VARCHAR2(25)

 EMAIL                    NOT NULL VARCHAR2(25)

 PHONE_NUMBER                      VARCHAR2(20)

 HIRE_DATE                NOT NULL DATE

 JOB_ID           NOT NULL VARCHAR2(10)

 SALARY                    NUMBER(8,2)

 COMMISSION_PCT            NUMBER(2,2)

 MANAGER_ID                        NUMBER(6)

 DEPARTMENT_ID                     NUMBER(4)
```

```
SELECT last_name, job_id, salary

FROM employees

WHERE salary =(SELECT max(salary)

FROM employees);
```

A. It executes successfully and gives the employees who have salaries equal to the max salary.
B. It executes successfully but does not give the required results
C. It throws an error as a group function is used in the sub-query
D. It throws an error as a single row sub-query should contain a multi-row operator

**Answer: A**.

## 9.What will be the outcome of the query that follows?

```
SELECT first_name, last_name, min(salary)

FROM employees

GROUP BY department_id

HAVING MIN(salary)>

                (SELECT min(salary)

                FROM employees

                WHERE department_id =100);
```

A. It executes successfully and gives the names and minimum salary greater than department 100 of all employees
B. It executes successfully and gives the salaries of the employees in department 100
C. It executes successfully and gives the names and minimum salaries of all the employees.
D. It throws an error.

**Answer: A.**

## 10. **Which of the following is not a format for Outer Joins in Oracle DB?**

A. Right
B. Left
C. Centre
D. Full

**Answer: C.**

**11. For which two constraints does the Oracle Server implicitly create a unique index?**

A. NOT NULL
B. PRIMARY KEY
C. FOREIGN KEY
D. CHECK
E. Default

**Answer: B**

12 . Consider the following code −

```
DECLARE
  a number(3) := 100;
  b number(3) := 200;
BEGIN
  IF( a = 100 ) THEN
    IF( b <> 200 ) THEN
      dbms_output.put_line(b);
    END IF;
  END IF;
  dbms_output.put_line(a);
END;
```

a) It has syntax error, so there will not be any output.
b) 200
c) 300
d) 100

Answer: D

13. Consider the following code snippet: how many times the loop will run?

```
DECLARE
  a number(2) := 9;
BEGIN
  WHILE a < 30 LOOP
    a := a + 3;
dbms_output.put_line(a);
  END LOOP;
END;
```

a) 10
b) 8
c) 7
d) 9

Answer: C

14.Consider the join of a relation R with relation S. If R has m tuples and S has n tuples, then the maximum size of join is:

(A) **mn** (B) m+n (C) (m+n)/2 (D) 2(m+n)

Answer: A

15 - Consider the following schema −

```
STUDENTS(student_code, first_name, last_name, email,
        phone_no, date_of_birth, honours_subject, percentage_of_marks);
```

Which of the following query would display all the students whose first name starts with the character 'A'?

A - select first_name from students where first_name like 'A%';

B - select first_name from students where first_name like '%A';

C - select first_name from students where first_name like '%A%';

D - select first_name from students where first_name like 'A';

Answer: A

---

1. Which of the following relational algebra operations do not require the participating tables to be union-compatible?

**(A)** Union
**(B)** Intersection
**(C)** Difference
**(D)** Join
**Ans: (D)**

2. Which of the following is not a property of transactions?
**(A)** Atomicity
**(B)** Concurrency
**(C)** Isolation
**(D)** Durability
**Ans: (B)**

3. Checkpoints are a part of
**(A)** Recovery measures.
**(B)** Security measures.
**(C )** Concurrency measures.
**(D)** Authorization measures.
**Ans: (A)**

4. Tree structures are used to store data in
**(A)** Network model.
**(B)** Relational model.
**(C)** Hierarchical model.
(**D)** File based system.
**Ans: (C )**

5. Precedence graphs help to find a

**(A)** Serializable schedule.
**(B)** Recoverable schedule.

**(C)** Deadlock free schedule.
**(D)** Cascadeless schedule.
**Ans: (A)**

6. It is an abstraction through which relationships are treated as higher level entities
**(A)** Generalization.
**(B)** Specialization.
**(C)** Aggregation.
**(D)** Inheritance.
**Ans: (C )**

7. A relation is in _____ if an attribute of a composite key is dependent on an attribute of other composite key.
**(A)** 2NF
**(B)** 3NF
**(C)** BCNF
**(D)** 1NF
**Ans: (B)**

8. What are the desirable properties of a decomposition?
**(A)** Partition constraint.
**(B)** Dependency preservation.
**(C)** Redundancy.
**(D)** Security.
**Ans: (B)**

9. In an E-R diagram double lines indicate
**(A)** Total participation.
**(B)** Multiple participation.
**(C)** Cardinality N.
**(D)** None of the above.
**Ans: (A)**

10. In SQL the statement **select * from R, S** is equivalent to
**(A)** Select * from R natural join S.
**(B)** Select * from R cross join S.
**(C)** Select * from R union join S.
**(D)** Select * from R inner join S.
**Ans: (B)**

11. Which of the following is not a consequence of concurrent operations?
**(A)** Lost update problem.

**(B)** Update anomaly.
**(C)** Unrepeatable read.
**(D)** Dirty read.
**Ans: (B)**

12. If the closure of an attribute set is the entire relation then the attribute set is a
**(A)** superkey
**(B)** candidate key
**(C)** primary key
**(D)** not a key
**Ans: (A)**

13.Which one is correct statement?
Logical data independence provides following without changing application programs:
**(i)** Changes in access methods.
**(ii)** Adding new entities in database
**(iii)** Splitting an existing record into two or more records
**(iv)** Changing storage medium
**(A)** (i) and (ii)
**(B)** (iv) only,
**(C)** (i) and (iv)
**(D)** (ii) and (iii)
**Ans: (D)**

14. Which of the following statement on the view concept in SQL is invalid?
**(A)** All views are not updateable
**(B)** The views may be referenced in an SQL statement whenever tables are referenced.
**(C)** The views are instantiated at the time they are referenced and not when they are defined.
**(D)** The definition of a view should not have GROUP BY clause in it.

**Ans: (D)**

15.The FD $A \rightarrow B$ , $DB \rightarrow C$ implies
**(A)** $DA \rightarrow C$
**(B)** $A \rightarrow C$
**(C)** $B \rightarrow A$
**(D)** $DB \rightarrow A$
**Ans: (A)**

1. An instance of relational schema R (A, B, C) has distinct values of A including NULL values. Which one of the following is true?

e) is a candidate key
f) A is not a candidate key
g) A is a primary Key
h) Both (A) and (C)

ANS: b

**2.** View the Exhibit and examine the data in the employees table:

EMPLOYEES

| EMPLOYEE_ID | EMPLOYEE_NAME | MANAGER_ID | SALARY | DEPTNO |
|---|---|---|---|---|
| 7369 | SMITH | 7902 | 800 | 20 |
| 77698 | ALLEN | | 1600 | 30 |
| 7902 | WARD | | 1250 | 30 |
| 7654 | MARTIN | 7698 | 1250 | 30 |

You want to display all the employee names and their corresponding manager names.

Evaluate the following query:

```
SQL> SELECT e.employee_name "EMP NAME", m.employee_name "MGR NAME"
FROM employees e _______________ employees m
ON e.manager_id = m.employee_id;
```

Which join option can be used in the blank in the above query to get the required output?

**A.** INNER JOIN

**B.** FULL OUTER JOIN

**C.** LEFT OUTER JOIN

**D.** RIGHT OUTER JOIN

**Answer: C**

**3. Which of the following single-row operators can be used for writing a sub-query?**

E. >=
F. <
G. =
H. All of the above

**Answer: D.**

**4.You need to find the salaries for all the employees who have a higher salary than the Vice President of a company 'ABC'.Which of the following queries will give you the required result? (Consider the table structure as given)**

```
SQL> DESC employees

Name                      Null?    Type

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

 EMPLOYEE_ID              NOT NULL NUMBER(6)

 FIRST_NAME                        VARCHAR2(20)

 LAST_NAME                NOT NULL VARCHAR2(25)

 EMAIL                    NOT NULL VARCHAR2(25)

 PHONE_NUMBER                      VARCHAR2(20)

 HIRE_DATE                NOT NULL DATE

JOB_ID    NOT NULL VARCHAR2(10)

 SALARY          NUMBER(8,2)

 COMMISSION_PCT  NUMBER(2,2)

 MANAGER_ID       NUMBER(6)

 DEPARTMENT_ID     NUMBER(4)
```

(a)

```
SELECT first_name, last_name, salary

FROM employees

WHERE salary >(SELECT salary

FROM employees

WHERE job_id ='VICE-PRESIDENT');
```

(b)

```
SELECT first_name, last_name, salary

FROM employees

WHERE salary =(SELECT salary

FROM employees

WHERE job_id ='VICE-PRESIDENT');
```

(c)

```
SELECT first_name, last_name, salary

FROM employees

WHERE job_id ='VICE-PRESIDENT');
```

D. None of the above

**Answer: A.**

## 5. What will be the outcome of the following query? (Choose the most appropriate answer)

```
SQL> DESC employees

Name                      Null?    Type

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

 EMPLOYEE_ID              NOT NULL NUMBER(6)

 FIRST_NAME                        VARCHAR2(20)

 LAST_NAME                NOT NULL VARCHAR2(25)

 EMAIL                    NOT NULL VARCHAR2(25)

 PHONE_NUMBER                      VARCHAR2(20)

 HIRE_DATE                NOT NULL DATE

 JOB_ID           NOT NULL VARCHAR2(10)

 SALARY                    NUMBER(8,2)

 COMMISSION_PCT            NUMBER(2,2)

 MANAGER_ID                        NUMBER(6)
```

```
DEPARTMENT_ID                    NUMBER(4)
```

```
SELECT last_name, job_id, salary

FROM employees

WHERE salary =(SELECT max(salary)

FROM employees);
```

E. It executes successfully and gives the employees who have salaries equal to the max salary.
F. It executes successfully but does not give the required results
G. It throws an error as a group function is used in the sub-query
H. It throws an error as a single row sub-query should contain a multi-row operator

**Answer: A.**

### 6.What will be the outcome of the query that follows?

```
SELECT first_name, last_name, min(salary)

FROM employees

GROUP BY department_id

HAVING MIN(salary)>

                (SELECT min(salary)

                FROM employees

                WHERE department_id =100);
```

E. It executes successfully and gives the names and minimum salary greater than department 100 of all employees
F. It executes successfully and gives the salaries of the employees in department 100
G. It executes successfully and gives the names and minimum salaries of all the employees.
H. It throws an error.

**Answer: A.**

7. **Which of the following is not a format for Outer Joins in Oracle DB?**

E. Right
F. Left
G. Centre
H. Full

**Answer: C.**

8. **For which two constraints does the Oracle Server implicitly create a unique index?**

A. NOT NULL
B. PRIMARY KEY
C. FOREIGN KEY
D. CHECK
E. Default
**Answer: B**

9.Consider the join of a relation R with relation S. If R has m tuples and S has n tuples, then the maximum size of join is:

(A) **mn** (B) m+n (C) (m+n)/2 (D) 2(m+n)

Answer: A

10 - Which of the following is not true about SQL statements?

A - SQL statements are not case sensitive.

B - SQL statements can be written on one or more lines.

C - Keywords cannot be split across lines.

D - Clauses must be written on separate lines.

Answer D

**11. 'AS' clause is used in SQL for**
(A) Selection operation. (B) Rename operation.
(C) Join operation. (D) Projection operation.
**Ans: None of the above...Used for execution time rename only**

**12 The language which has recently become the defacto standard for interfacing application programs with relational database system is**
(A) Oracle. (B) SQL.
(C) DBase. (D) 4GL.
**Ans: B**

**13 It is possible to define a schema completely using**
(A) VDL and DDL. (B) DDL and DML.
(C) SDL and DDL. (D) VDL and DML.
**Ans: B**

**14. Key to represent the relationship between tables is called**
(A) Primary key
(B) Secondary Key
(C) Foreign Key
(D) None of these
**Ans: C**

**15. Which of the following are the properties of entities?**
(A) Groups (B) Table
(C) Attributes (D) Switchboards
**Ans: C**

---

1. **A relational database developer refers to a record as**
   (A) Criteria. (B) a relation.
   (C) a tuple. (D) an attribute.
   **Ans: C**

2. **Count function in SQL returns the number of**
   (A) values. (B) distinct values.
   (C) groups. (D) columns.
   **Ans: A**

3. **An advantage of the database management approach is**
   (A) data is dependent on programs.
   (B) data redundancy increases.

(C) data is integrated and can be accessed by multiple programs.
(D) none of the above.
**Ans: C**

4. **A DBMS query language is designed to**
   (A) support end users who use English-like commands.
   (B) support in the development of complex applications software.
   (C) specify the structure of a database.
   (D) all of the above.
   **Ans: D**

5. **E-R model uses this symbol to represent a weak entity set?**
   (A) Dotted rectangle.
   (B) Diamond
   (C) Doubly outlined rectangle
   (D) None of these
   **Ans: C**

6. **Key to represent the relationship between tables is called**
   (A) Primary key
   (B) Secondary Key
   (C) Foreign Key
   (D) None of these
   **Ans: C**

7. **NULL is**
   (A) the same as 0 for integer
   (B) the same as blank for character
   (C) the same as 0 for integer and blank for character
   (D) not a value
   **Ans: D**

8. What do you mean by one to many relationship between Teacher and Class table?

A.One class may have many teachers
B.One teacher can have many classes
C.Many classes may have many teachers
D.Many teachers may have many classes
**Ans: B**

9. This key that uniquely identifies each record is called :

   A.Primary Key
   B.Key Record

C.Unique Key
D.Field Name
**Ans: A**

**10.** **Which name must be unique within a database?**

A.Table
B.Field
C.Record
D.Character

Answer : Option **A**

**11.** If the tuples are satisfying the where predicate, then they are placed into groups by the

- Having clause
- Group by clause
- Like clause
- Distinct clause

Answer : Option **B**

**12.** Orders table:

| O_Id | OrderDate | OrderPrice | Customer |
|---|---|---|---|
| 1 | 2009/12/12 | 1000 | Harry |
| 2 | 2008/03/23 | 1600 | Nancy |
| 3 | 2008/09/02 | 700 | Harry |
| 4 | 2008/09/03 | 300 | Harry |
| 5 | 2008/08/30 | 2000 | Jensen |
| 6 | 2008/03/04 | 100 | Nancy |

We want to find the total sum (total order) of each customer. Which of the below statement should we use:

A) SELECT Customer,SUM(OrderPrice) FROM Order
GROUP BY Customer

B) SELECT Customer,SUM(OrderPrice) FROM Orders
GROUP BY Orders

C) SELECT Customer,SUM(OrderPrice) FROM Orders
GROUP BY Customer

D) SELECT Customer,SUM(OrderPrice) FROM Orders
GROUP BY OrderPrice
Ans:-A

**13.** Which one is correct syntax for Insert Statement?

a) Insert Columns(Col1, Col2,Col3);
b) Insert into (Col1, Col2,Col3) VALUES (Val1,Val2,Val3);
c) Insert Columns(Col1, Col2,Col3) VALUE (Val1, Val2,Val3) Into ;
d) None of the above.
Ans:-D

**14.** What is the purpose of Order By Clause in SQL server?

a) It is used to sort the result.
b) It is used to change sequence order of columns
c) It can' be used in SQL Server
d) None of the above
Ans:-A

**15.** What needs to be added when user want to show results by Descending Order?

a) Descending order cannot be possible.
b) User can add DESC with Order By clause
c) User can add '<>ASC' with Order by Clause.
d) None of the above
Ans:-B

---