# CS & IT ENGINEERING

Database Management System

ER Model & Query Language Practice Set (Part - 01) Discussion



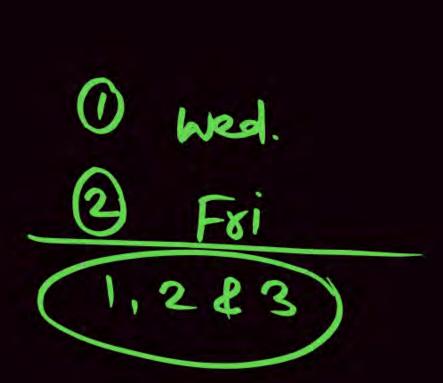




TOPICS TO BE COVERED

01 Question

02 Discussion



Pra. Sheet 1 2 3 4 5



Which of the following statements about ER model is/are correct?



S<sub>1</sub>: Relationship sets can have attributes of their own.

XS<sub>2</sub>: Many to many relationships cannot be represented in ER diagram.



S<sub>1</sub> only

B.  $S_1$  and  $S_3$  only

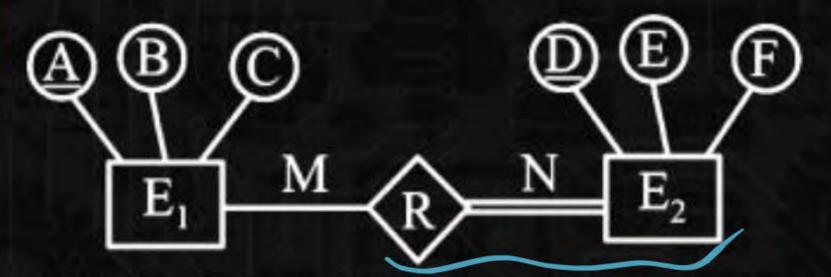
 $S_2$  and  $S_3$  only

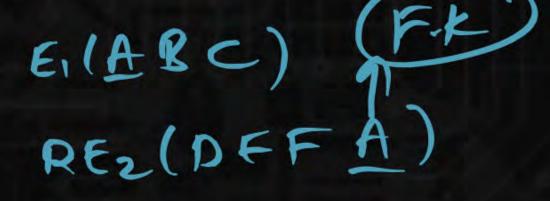
D.  $S_1$ ,  $S_2$  and  $S_3$ 



Consider the following ERD:







Which of the following is the minimum number of relational table and foreign key required for above ERD?

[MCQ]



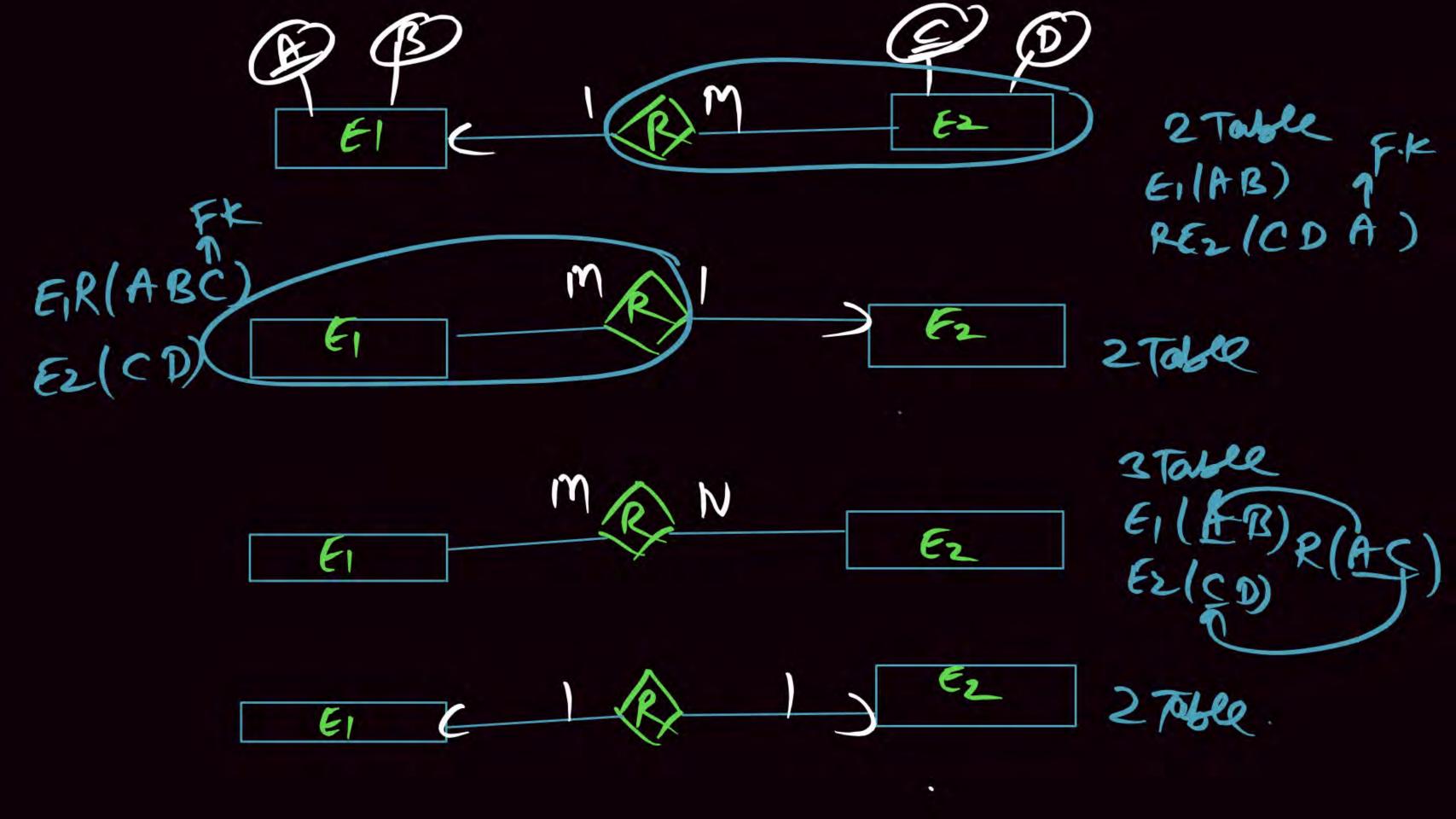
3, 2

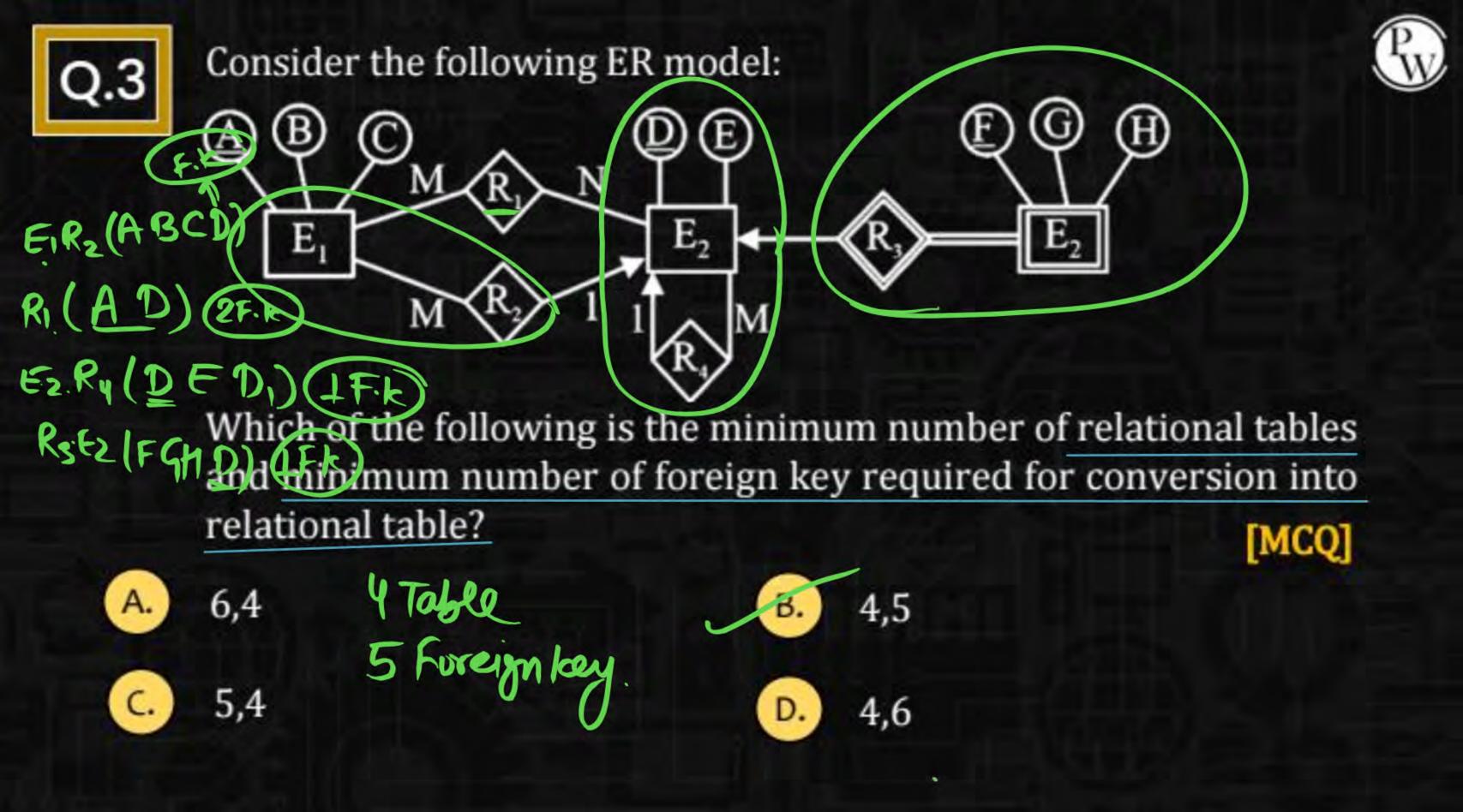


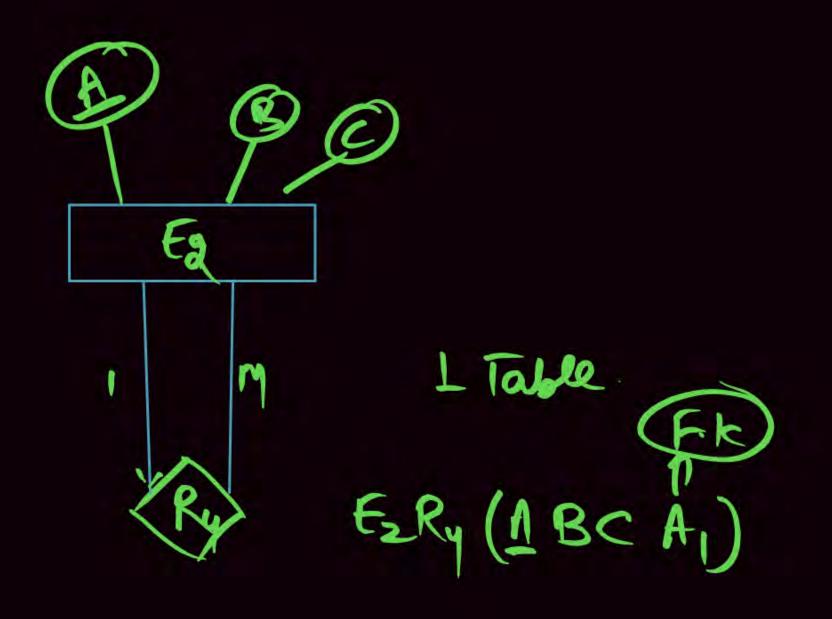
2,1

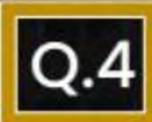


None of these



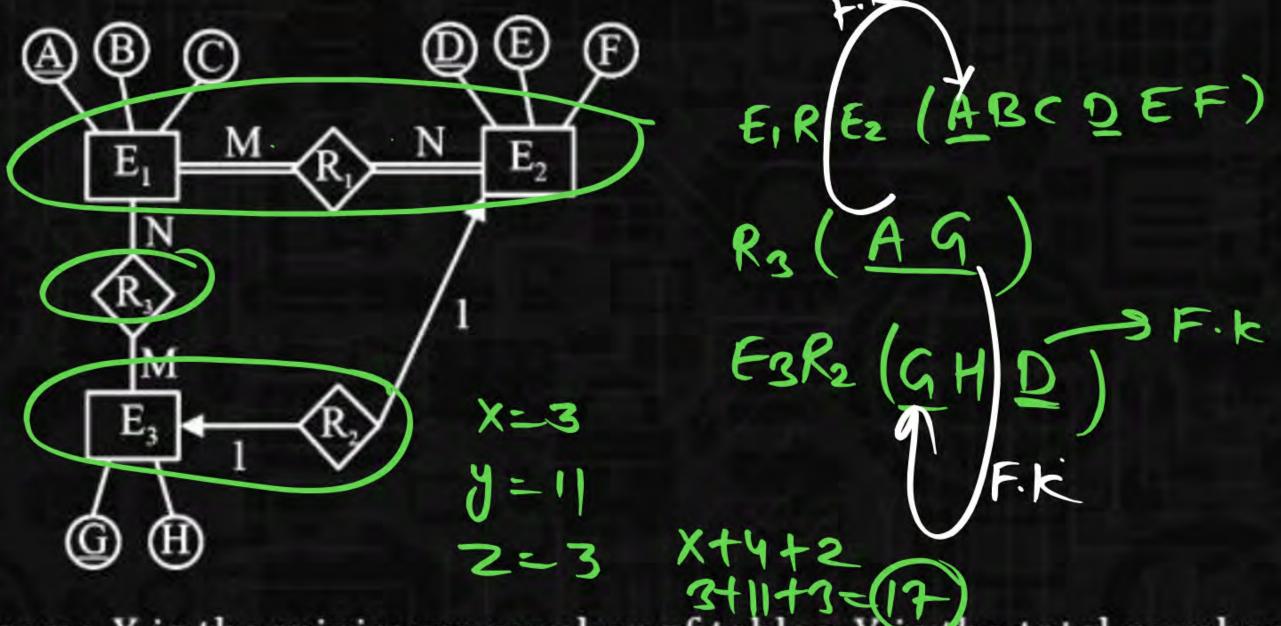




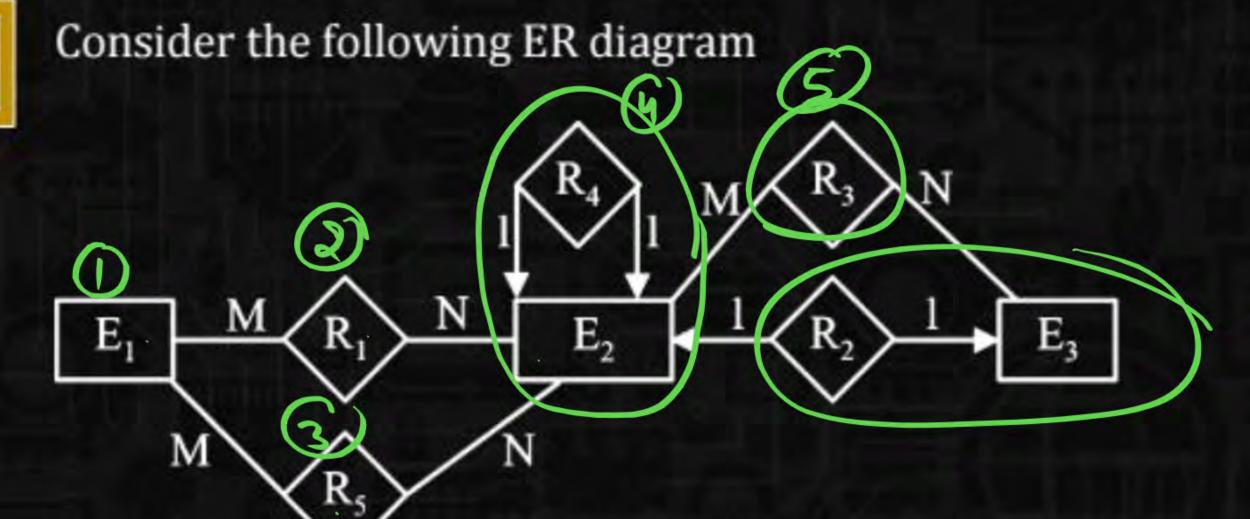


#### Consider the following ER model:





Assume X is the minimum number of tables, Y is the total number of attributes in relational tables and Z is the minimum number of foreign key, then find the value of X + Y + Z?



Total number of RDBMS table in the above diagram?

EI EZRY

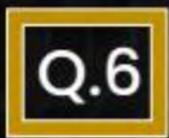
RI R3

R2E3

6 Table Ang

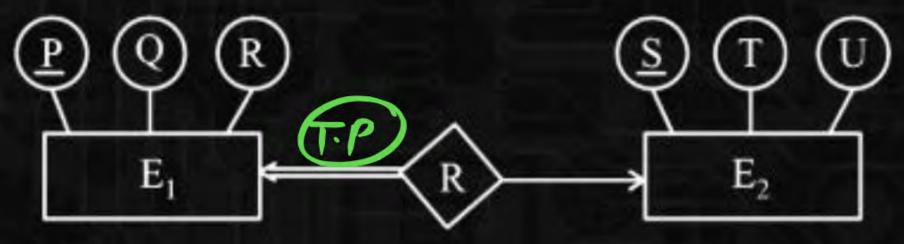
R2E3

[NAT]



Consider the following ER model:

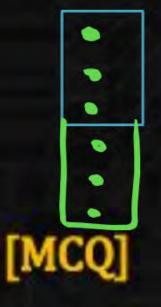




If 'x' entries in E1 and 'y' entries in E2.

How many entries in relation set (R)?



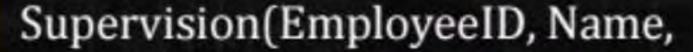


- A. Exactly y
- Exactly x

- B. At most x
- D. At least x and at most m



Consider the following relation





SupervisorID) pertaining to a company's database:

		YFRY	
EmployeeID	Name	SupervisorID	sial we beside
	A	4	-> 'Q' Not bossible
2)	A	3 NULL	BCZ 'O' is Not Present
3	В	1	
(4)	С	5 NULL	in formally kept
5	D	2	O
6	E	5	
7	В	3	
8	A	1	

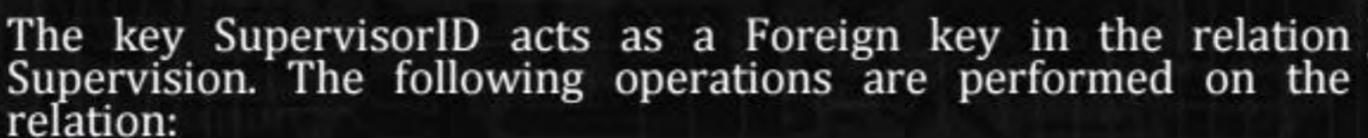
The key SupervisorID acts as a Foreign key in the relation Supervision.

The following operations are performed on the relation:



The value Present in Bureign key Must be Asesent in Primary key of Referenced Relation

foreign key may Contain Diplicate 4 NVU volues.





Insert a new employee having EmployeeID=='9'and Name = A and SupervisorID as '1';

Vi. Set SupervisorID as 'NULL' where EmployeeID==2 OR EmployeeID==4;

III: Set SupervisorID as '0' where EmployeeID==1;

Which of the above operation(s) is/are ALLOWED?

A. I only

C. III only

B. I and II only

D. I and III only



```
Consider the following SQL Query:
Create table department
{
```

The Tuples (a, b) currently in the table department are:

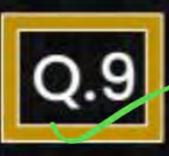
(0, 2) (1, 2) (2, 1) (3, 0) (5, 0) (7, 3) (4, 2) (6, 1)

Consider the following query

Delete from department where a = 0

The number of Tuples that must be additionally deleted to preserve referential integrity is \_\_\_\_\_.





222

Consider the following relation Supervision (EmployeeID, Name, SupervisorID) pertaining to a company's database:

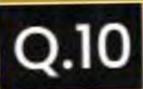


	EmployeeID	Name	SupervisorID	14-11/11/12/12/1
·····	······································	······	······································	. (4,5) (1.4) (7,4)
	2	A	6	
	3	В	2	
·····	······································	·····	······································	(811)
-		D	2	•
	6	E	3	
^	······	······································	······································	
~~~~		······		~

The key SupervisorID acts as a Foreign key in the relation Supervision. The schema follows "On Delete Cascade" constraint. The employee having EmployeeID '5' is deleted from the relation Supervision. The number of tuples remaining in the relation are

3) M

[NAT]



## Q.10 Consider the following relational schemas:



	— Catalogue		
	sno	pno	cost
	S1	P1	150
a	S1	P2	50
	S1_	(P3)	100
3)	<b>(S2)</b>	(P4)	200
(3)	S2	P5	250
	S3	P1	250
	S3	P2	150
0	S3	P5	300
(4)	S3	(P4)	250

	Suppliers	
sno	sname	location
S1	M/s Royal furniture	Delhi
(S2)	M/s Balaji furniture	Bangalore
\$3	M/s Premium furniture	Chennai
	Parts	
pno	pname	part_spec
P1	Table	Wood
P2	Chair	Wood
(P3)	Table	Steel :
(P4)	Almirah	- Steel :
P5	Almirah	Wood

All the items supplied by M/s Balaji Furniture are banned. Moreover, the company no longer sells steel items. The schema follows "On Delete Cascade" constraint. Delete all the records from Catalogue where sno = S2 OR pno = P3 OR pno = P4. The number of tuples deleted from the Catalogue relation is

Consider the following statements:



P: X Insertion of tuples into referenced relation may cause foreign key violation.

Insertion of tuples into referencing relation may cause foreign key violation.

Which of the following is/are CORRECT?

A. Ponly

Q only

C. Both P and Q

D. Neither P nor Q

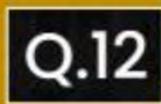
(forent) Referenced Resm

Investion.

Deletion (May Cause Violation) [MCQ]
Referencing Toble

Hatehon

Drection (may Violation)



#### Consider the following statements:



$$S_1$$
:  $\pi_{\text{List N}} (\pi_{\text{List N-1.....}}(\pi_{\text{List 1}}(R)) = \pi_{\text{List 1}} (\pi_{\text{List 2.....}}(\pi_{\text{List N}}(R)))$ 

S<sub>2</sub>: 
$$\sigma_{c_n}\left(\sigma_{c_{n-1}}.....\left(\sigma_{c_1}(R)\right)\right) \equiv \sigma_{c_1}\left(\sigma_{c_2}....\left(\sigma_{c_N}(C)\right)\right)$$

Which of the following statement(s) is/are correct?

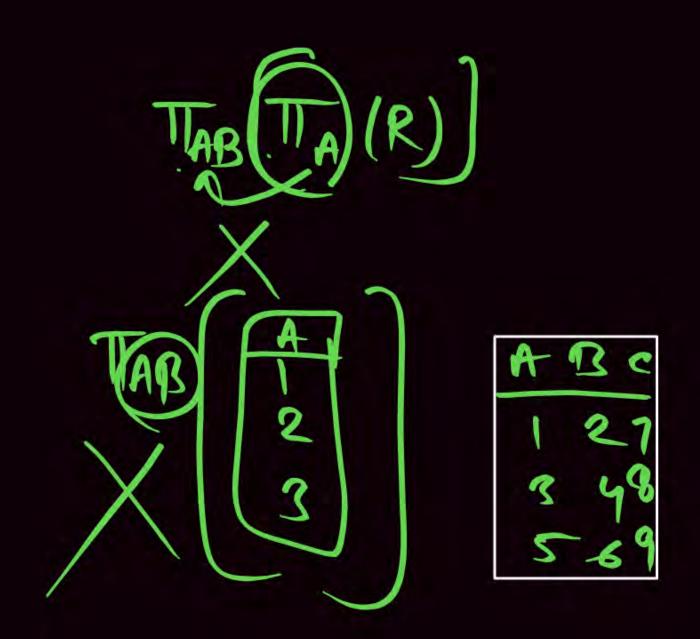
$$G: (0)^{33}$$
,  $C_2>5(F>5)$  [MCQ]

A. 
$$S_1$$
 only

C. Both S<sub>1</sub> and S<sub>2</sub> only

D. Neither S<sub>1</sub> nor S<sub>2</sub>

TIA (TIAB (R)) 1 23



Q.13 Consider

Consider the following relations-



Enroll (CandidateID, Papercode) with 5000 tuples and Count(Papercode, Number\_of\_appearing\_candidates) with 29 tuples.

Assume, one candidate can enroll for multiple Papercode. Let p and q be the maximum and minimum number of records in Count Enroll then the value of p + q is \_\_\_\_\_.

SI CI SI CI SI CI SI CI

Whenever Two Tables are Joined with respect to Primary key foreign bey then Maximum Number of Tubles in the Resulting Relation is equals Number of tubles in the.

Reflerencing Relation. P=5000

Paper Code is the Primary key of the Count Relation To Contain Unique there in Enroll Table Paper Code is Present (Part of) in key So Paper Code Contain unique Contain not NULL. So Minimum 9 = 5000 (Conduct Paper Code)

P+9-5000+50000=100000 Ang

Let R<sub>1</sub> and R<sub>2</sub> be two relations which are union compatible with

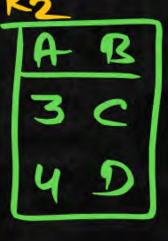


the same set of attributes.

Green 
$$S_1$$
:  $R_1 \cap R_2 = T_1 \bowtie T_2$ 

$$Crushed S_2: R_1 \cup R_2 \equiv T_1 \bowtie T_2$$

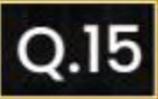
A B 1 A 2 B



Which of the above statement(s) are INCORRECT?

A. 
$$S_1$$
 only

$$S_2$$
 only



Consider the following relations:



Enroll (Sid, Papercode), Paper(Papercode, Desc) Which of the following relational algebra displays the sid's who only enrolled for Papercode having descriptions (Desc) as "CS"?

[MSQ]



 $\pi_{sid}$  (Enroll  $\bowtie$  Paper)

Desc = CS

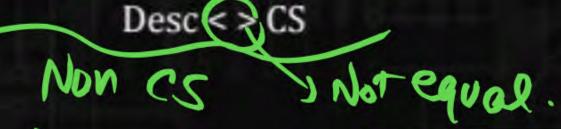


 $\pi_{sid}$  (Enroll) –  $\pi_{sid}$  ((Enroll  $\bowtie \sigma$  (Paper))

Desc = CS

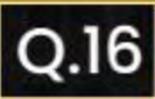


 $\pi_{sid}$  (Enroll) –  $\pi_{sid}$  (Enroll  $\bowtie$   $\sigma$  (Paper))





None



#### Consider a relations work (EmpiD, Project ID)



The suitable relational algebra expression that projects the employee ids who work exactly in one project is-

Project Id = P



$$\pi_{\text{Empid}}$$
 (Work) –  $\pi_{\text{Empid}}$  (Work

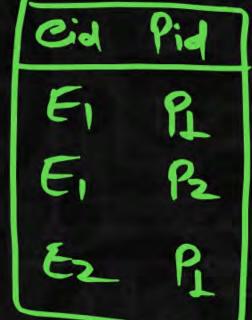
Empid = E 
$$\rho_{E, P}$$
 (work))



$$\pi_{\text{Empid}}$$
 (Work

Empid = E
$$\rho_{E, P} \text{ (work)}$$

Project ID ≠ P





$$\pi_{\text{Empid}}$$
 (work)  $-\pi_{\text{Empid}}$  (work)

Empid = E
$$\rho_{E, P} \text{ (work)}$$

^ Project ID ≠P



None



avry more than one Protect



Let R<sub>1</sub> and R<sub>2</sub> be two relations with n and m tuples.



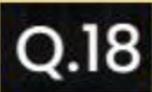
 $S_1$ : The maximum number of records in  $R_1$ -  $R_2$  is n.

[MCQ]

 $S_2$ : The minimum number of records in R1 $\cup$ R<sub>2</sub> is max (n, m)

- A.  $S_1$  only
- $S_2$  only
- Both S<sub>1</sub> and S<sub>2</sub>
- D. Neither S<sub>1</sub> nor S<sub>2</sub>

$$R_1 - R_2 = \phi$$
 to  $\frac{max}{n}$ 

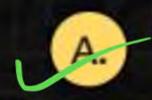


## Q.18 Consider the relation-

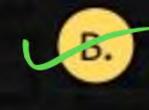


Works (Eid Pid) project (Pid, Name)

The relational algebra expression that displays the Eids who work in every project Name = 'M \_\_\_\_.



 $\pi_{Eid, Pid}$  (works)/ $\pi_{Pid}$  ( $\sigma_{Name = M}$  (Project))



$$\pi_{\text{Eid}} (\text{Work}) - \pi_{\text{Eid}} \left[ \pi_{\text{Eid}} (\text{Work}) \times \pi_{\text{pid}} \left( \sigma_{\text{Name} = m} (\text{Project}) \right) - \pi_{\text{Eid Pid}} (\text{works}) \right]$$



$$\pi_{\text{Eid}} (\text{Work}) - \left[ \pi_{\text{Eid}} (\text{Work}) \times \pi_{\text{pid}} \left( \sigma_{\text{Name} < > m} (\text{Project}) \right) - \pi_{\text{Eid Pid}} (\text{works}) \right]$$



None

Consider the two relations  $R_1$  and  $R_2$  such that they have no attributes in common then-



[MSQ]

$$\mathbf{S_1} \cdot \mathbf{R_1} \bowtie \mathbf{R_2} = \mathbf{R_1} \times \mathbf{R_2}$$

$$\times S_2$$
:  $R_1 \bowtie R_2 = \phi$ 

Which of the given statement(s) is/are correct?



S<sub>1</sub> only

- B.  $S_2$  only
- C. Both S<sub>1</sub> and S<sub>2</sub>
- D. Neither S<sub>1</sub> nor S<sub>2</sub>

When No Common Attribute

RIMR2 = RIXR2

RINRz= & Coney 15 any one Relation is empty But Here RILRZ Non empty 50 St Falge.

#### Consider the following keywords.



- A. SELECT
- B. TOP

DEFGACHB

- C. DISTINCT
- D. FROM
- E. WHERE
- F. GROUP BY
- G. HAVING

H. ORDER BY

The above keywords are used in the given SQL query below.

SLECT TOP NumberOfRows DISTINCT Col1, Col2

FROM TableNameX, TableNameY

GROUP BY ColumnName

HAVING expression

ORDER BY ColumnName;

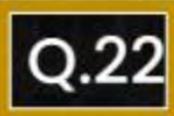
Which of the following is the correct query execution order according to SQL Standard?



- A. DEFGAHBC
- DEFGACHB
  - C. DEFGABCH
  - D. ADEFGHCB

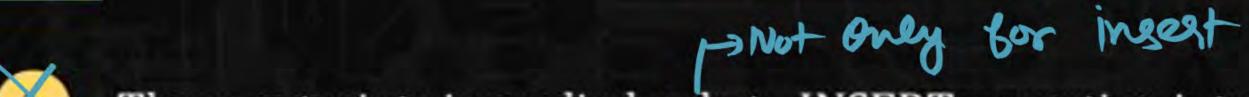
Consider a relation A(P,Q) currently has tuples {(1, 2), (1, 3), (3, 4) } and relation B(Q, R) currently has {(2, 5), (4, 6), (7, 8)}. Then the number of tuples in the result of the SQL query: SELECT \* FROM A NATURAL OUTER JOIN B; is 4 PASSES [NAT]





### Which of the following statement is/are true about constraints?





The constraints is applied only to INSERT operation into table.

A foreign key can't contain NULL values.

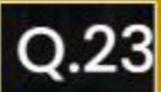
A column with the unique constraint can store NULLS.

We can have more than one column in a table as a part of primary key.

Ly unique Mention so store NULL.

AB is Primary key [Unique + NOTNULL]

Possible



#### Consider the following statements

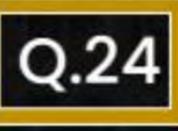


S<sub>1</sub>: An INSERT statement can add multiple rows per execution to a table.

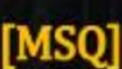
S<sub>2</sub>: An UPDATE Statement can modify multiple rows based on multiple condition on a table.

Choose the correct statements.

- A. Only  $S_1$  is true
- B. Only S<sub>2</sub> is true
- Both S<sub>1</sub> is S<sub>2</sub> are true
- D. Both S<sub>1</sub> and S<sub>2</sub> are false



Which of the below statement are true regarding the WHERE and HAVING clause in a SQL statement?





WHERE and HAVHIG clause can't be used together in SQL Statement.



The HAVING clause condition can have aggregate function.



The WHERE clause is used to exclude rows before the grouping of data.



The HAVING clause is used to exclude one or more aggregated results after grouping data.



