# CS & DA

# Database Management System

## Query Languages

**DPP 01 (Discussion Notes)**


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[MCQ]

#Q. Consider the following statements:

**$S_1$:** $\pi_{\text{List N}}(\pi_{\text{List N}-1}\ldots\ldots(\pi_{\text{List 1}}(R))$ — Commutative

$\equiv \pi_{\text{List 1}}(\pi_{\text{List 2}}\ldots\ldots(\pi_{\text{List N}}(R))$

$S_2$: $\sigma_{c_n}\left(\sigma_{c_{n-1}}\ldots\ldots\left(\sigma_{c_1}(R)\right)\right) \equiv \sigma_{c_1}\left(\sigma_{c_2}\ldots\ldots\left(\sigma_{C_N}(C)\right)\right)$

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

A. $S_1$ only

B. $S_2$ only

C. Both $S_1$ and $S_2$ only

D. Neither $S_1$ nor $S_2$

[MCQ]

#Q. Consider the following table


The number of tuples in $(I \bowtie J \bowtie K)$ where $\bowtie$ is the natural join is

A 5

B 8

C 10

D 11

**[MCQ]**

#Q.Consider the following relations:

Enroll (Sid, Papercode), Paper(Papercode, Desc)

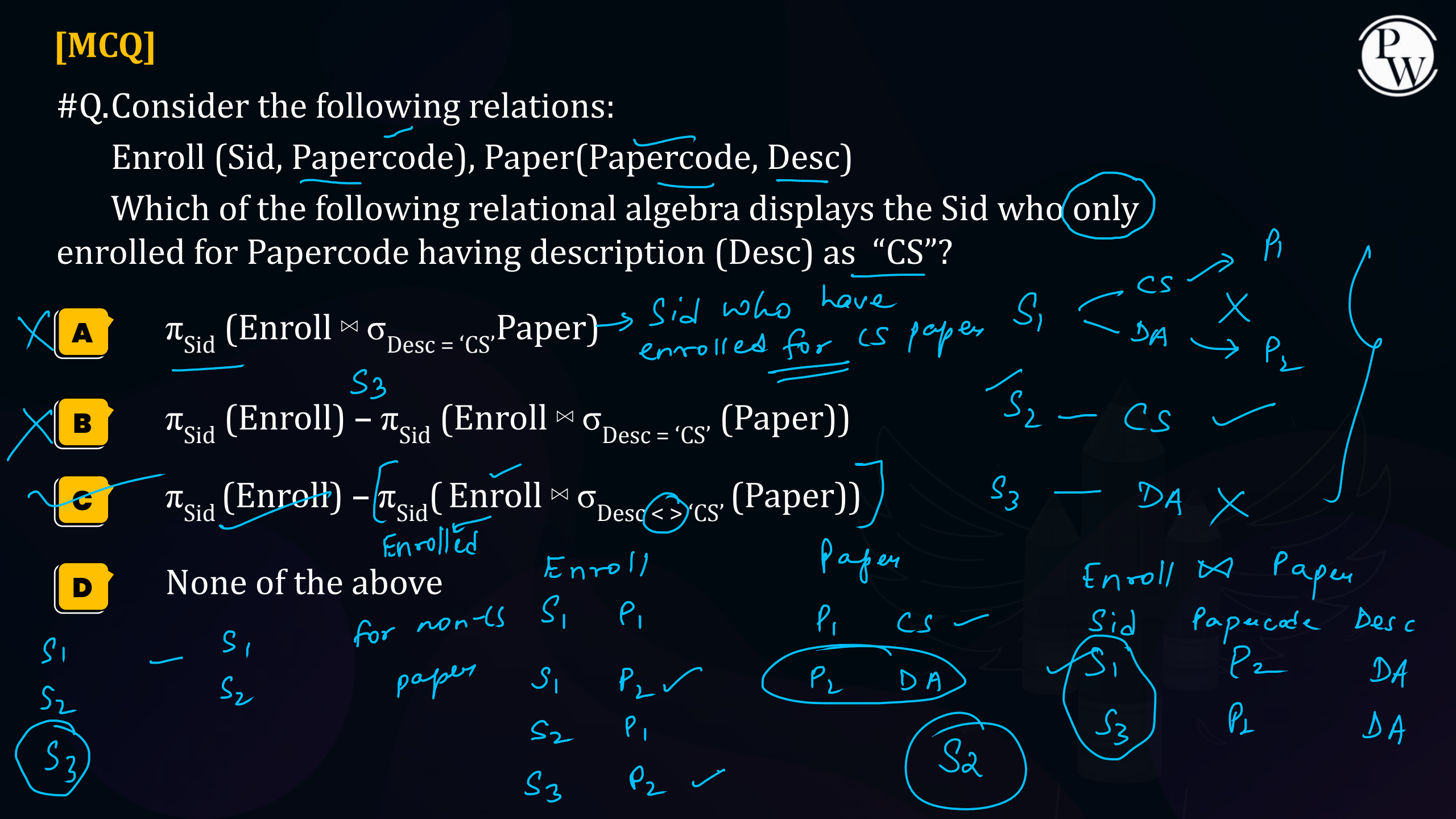
Which of the following relational algebra displays the Sid who only enrolled for Papercode having description (Desc) as "CS"?

**A** $\pi_{Sid}$ (Enroll $\bowtie$ $\sigma_{Desc = 'CS'}$ Paper)

**B** $\pi_{Sid}$ (Enroll) – $\pi_{Sid}$ (Enroll $\bowtie$ $\sigma_{Desc = 'CS'}$ (Paper))

**C** $\pi_{Sid}$ (Enroll) – [$\pi_{Sid}$ ( Enroll $\bowtie$ $\sigma_{Desc <> 'CS'}$ (Paper))]

**D** None of the above



[MCQ]

#Q.Consider a relation, work (EmpID, ProjectID)

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

A $\pi_{EmpID}(work) - \pi_{EmpID}(work \bowtie_{(EmpID = E \ \wedge \ ProjectID = P)} \rho_{E,P}(work))$

B $\pi_{EmpID}(work \bowtie_{(EmpID = E \ \wedge \ ProjectID \neq P)} \rho_{E,P}(work))$

C $\pi_{EmpID}(work) - \pi_{EmpID}(work \bowtie_{(EmpID = E \ \wedge \ ProjectID \neq P)} \rho_{E,P}(work))$

D None of the above

[MCQ]

#Q. Consider the relation R(ABCD) which of the following relational algebra expression return the lowest value of B? ($R_1$ and $R_2$ are rename of R)

I. $\Pi_{R_2 \cdot B}\,(R_1 \bowtie_{R1.B < R2.B} R_2)$

II. $\Pi_B(R) - \Pi_{R_1 \cdot B}\quad (R_1 \bowtie R_{1.B > R2.B}\, R_2)$

III. $\Pi_B(R) - \Pi_{R_1 \cdot B}\quad (R_1 \bowtie_{R1.B < R2.B} R_2)$

IV. $\Pi_B(R)$

R(A B C D)

1 2 3 4

5 6 1 8

2 7 9 10

A I

B II

C III

D IV

**[MCQ]**

#Q. Consider the following RA expression-

**P :** $\pi_{sid}$ (student) – $\pi_{sid}$ (student $\bowtie_{Marks < M \wedge Gender = G}$ $\rho_{(I, G, M)}$ (student))

on a relation student(sid, Gender, Marks)

The above query displays

- A The sid of the students who obtained the maximum marks.
- B The sids of the male and female students who obtained the maximum marks in their respective gender.
- C The sids of male students who scored higher than all the female students
- D None of the above

**[MSQ]**

#Q.Consider the relation-

Works (Eid , Pid), Project (Pid, Name)

The relational algebra expression that displays the Eids who work in every project with Name = 'M' is

Eid is not working in that project Pid

**A** $\pi_{Eid, Pid}$ (Works) / $\pi_{Pid}$ ($\sigma_{Name = 'M'}$ (Project))

**B** $\pi_{Eid}$ (Works) - $\pi_{Eid}$[($\pi_{Eid}$ (Works) × $\pi_{Pid}$ ($\sigma_{Name = 'M'}$ (Project))) - $\pi_{Eid, Pid}$ (Works)]

**C** $\pi_{Eid}$ (Works) - $\pi_{Eid}$[($\pi_{Eid}$ (Works) × $\pi_{Pid}$ ($\sigma_{Name <> 'M'}$ (Project))) - $\pi_{Eid, Pid}$ (Works)]

**D** None of the above

**[MCQ]**

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

**$S_1$:** $R_1 \bowtie R_2 = R_1 \times R_2$

**$S_2$:** $R_1 \bowtie R_2 = \varphi$

Which of the following is correct?

$R_1(A, B)$ $R_2(C, D)$

A $S_1$ only

B $S_2$ only

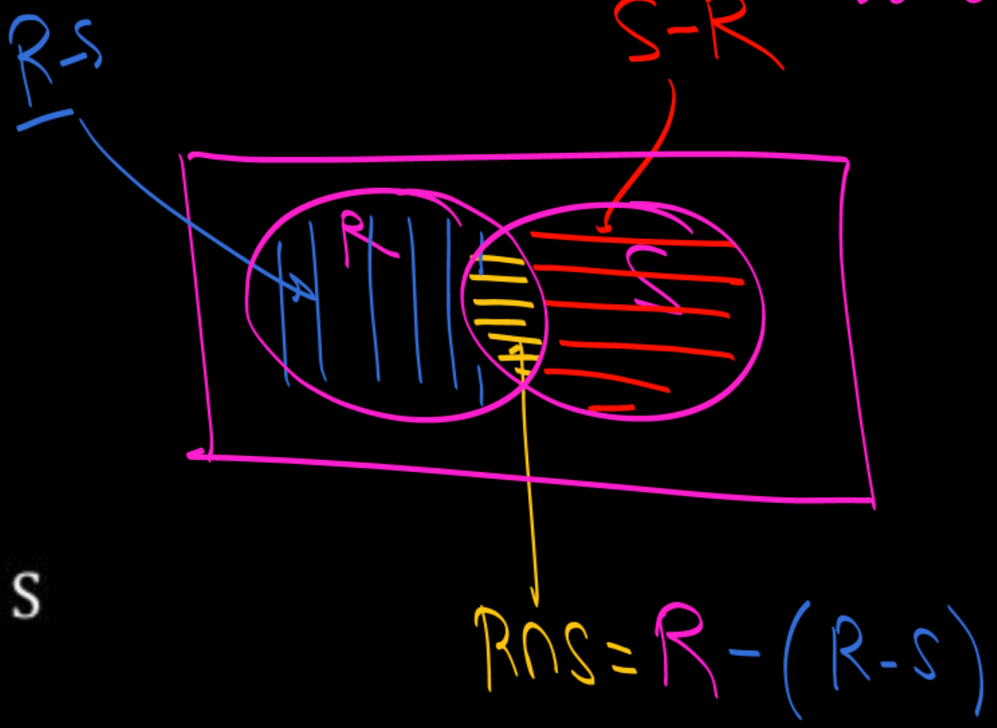
C Both $S_1$ and $S_2$ only

D Neither $S_1$ nor $S_2$

[MSQ] [Mark-2]

#Q. Suppose that two relations R (A, B) and S (A, B) have exactly the same schema. Which of the following is/are always true

i.e. Union Compatible




A $R \cap S = R - (R - S)$

B $R \cap S = R - (S - R)$

C $R \cap S = R$ NATURAL JOIN $S$

D $R \cap S = \sigma_{R.A=S.A \wedge R.B=S.B}(R \times S)$

# attributes = 2

# attributes = 4

[MSQ] [Mark-2]

#Q. Consider two relations R(A,B) and S(B,C) and the following relational algebra expression S: $\pi_{R.A\ S.B}(\sigma_{R.B=S.B}\ (R \times S))$
Which of the following relational algebra expressions are guaranteed to produce same result as S

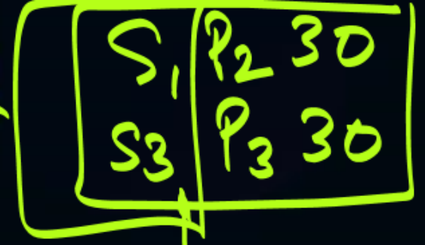
A $\pi_{A,B}\ (R \bowtie S)$

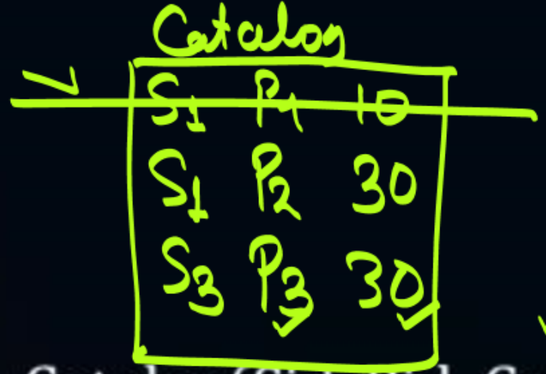
B $R \bowtie \pi_B\ (S)$

C $R \cap (\pi_A\ (R) \times \pi_B\ (S))$

D $\pi_{A,\ R.B}\ (R \times S)$

**[MCQ] -2 Mark**




#Q. Consider the following relational schemas

Supplier(Sid, Sname), Parts(Pid, Pname), Catalog(Sid, Pid, Cost)

and following two queries

- Q1: $\pi_{Sid}$ [Catalog − [$\pi_{C1.Sid, C1.Pid, C1.cost}$($\sigma_{(C1.cost < C2.cost)}$($\rho_{C1}$(Catalog) × $\rho_{C2}$(Catalog)))]]
- Q2: $\pi_{Sid}$ [Catalog] − $\pi_{C1.Sid}$ [$\pi_{C1.Sid, C1.Pid, C1.cost}$($\sigma_{(C1.cost < C2.cost)}$($\rho_{C1}$(Catalog) × $\rho_{C2}$(Catalog)))]

{S1, S3} − S1 = S3

A Both Q1 and Q2 always produces the same output.

B Output produced by Q1 is always different for output produced by Q2.

C Output produced by Q1 is subset of output produced by Q2.

D Output produced by Q2 is subset of output produced by Q1.

# THANK - YOU