CS&IT CINICIDAL





Discrete Mathematics

Set Theory

DPP 05 Discussion Notes



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TOPICS TO BE COVERED

01 Question

02 Discussion

A binary relation R on $N \times N$ is defined as follows:



abridacdrayabray

(a, b) R (c, d) if $a \ge c$ AND $b \ge d$, then consider the below abrab azanbzb.

(T): P: R is reflexive. (T)

7) **Q**: R is not symmetric.

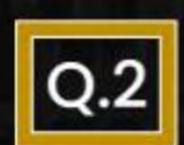
(7) S: The inverse of R is transitive relation.

Then which of the given propositional logic is true?

P ^ ~S TAFEF

030 CZa

(22) R(11) 11 R 22



Consider the below statements:



- I. A relation defined on an empty set is not a transitive relation. $\left\{\frac{f_{\alpha}|_{S}}{f_{\alpha}|_{S}}\right\}$
- II. The number of transitive relations on a given set can be calculated using the formula $\frac{n(n+1)}{2}$
- III. The complement of a transitive relation need not be transitive.

Then choose the correct options from the following I is true but II and III are false.

[MCQ]

- B. I and II both are true, III is false.
- C. I and II are false, only III is true.
- D. I and II are false, only II is true.

$$R = (=) \frac{7 \text{ ransi!}}{2 \text{ ransi!}}$$

$$R = (7) (7)$$

$$35 \times 53 \longrightarrow 383$$

$$345 5 3 \longrightarrow 323$$

Consider the below relations:

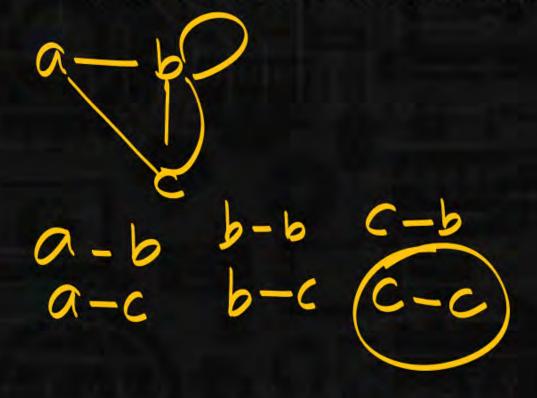


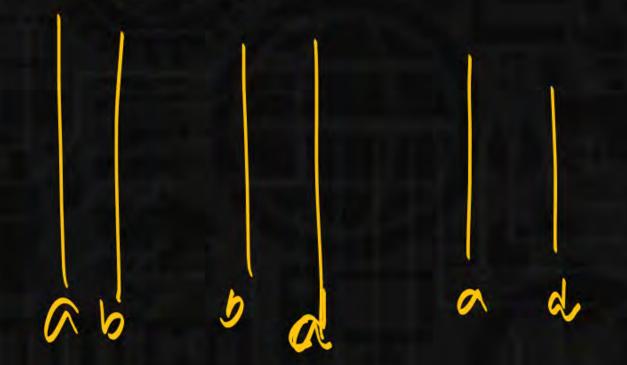
not transitive. R_1 : {(a, b), (b, c), (b, b), (a, c), (c, b)} defined on set A = {a, b, c}

R2: "Is parallel to" defined on set of lines.

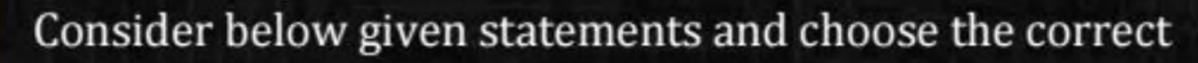
Ans : 1.

The number of above relations that are transitive are?









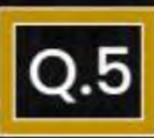


combinations from the following

I: The intersection of relation R_1 = "is a biological sibling" on the set of persons and relation R_2 = "is elder to" on the set of persons is also a transitive relation.

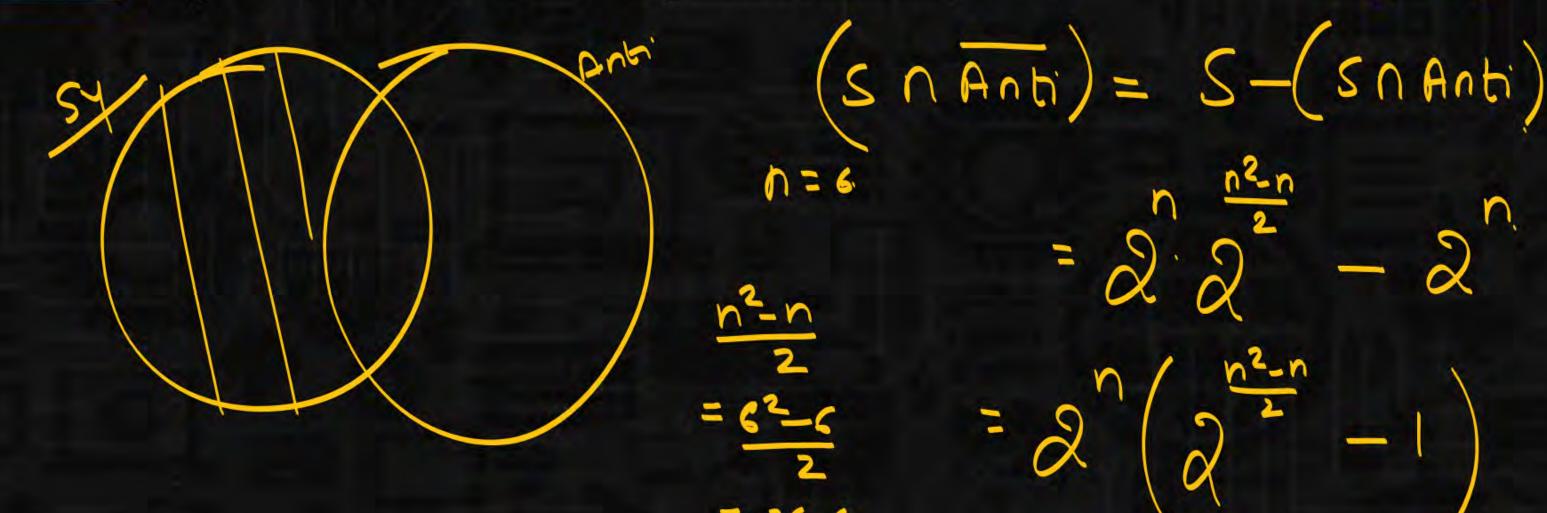
II: The union of two transitive relations is also transitive. [MCQ]

- A. I is true, II is false.
- B. I is false, II is true.
- C. Both I and II are false.
- D. Both I and II are true.



For the set of 6 elements the number of relations that are only symmetric but not anti-symmetric are ____. [NAT]







The number of given relations that are not transitive are: _____.



- I. "Division of" on the set of integers. (Transitive)
- II. "Multiple of" on the set of integers () vansitive)
- III. "Greatest common divisor" on the set of integers. [NAT]

3 5 5 6 36.
$$\alpha = 5b$$
 $b = 56$

and $\alpha(d)$ $\alpha(d)$



