Date: 27-01-2025   *Max Marks: 02*   *Duration: 10 minutes*

Note: Attempt question on question paper. All questions carry equal marks.

Roll#:_____   Student Signature:_____

Q1. Which of these relations on {0, 1, 2, 3} are partial orderings? Determine the properties of a partial ordering that the others lack.

a) {(0, 0), (1, 1), (2, 2), (3, 3)}

b) {(0, 0), (1, 1), (2, 0), (2, 2), (2, 3), (3, 2), (3, 3)}

Sol.

   a. **partial order**.
   b. not a partial order

Q2) List the ordered pairs in the relations on {1, 2, 3, 4} corresponding to these matrices (where the rows and columns correspond to the integers listed in increasing order).

$$\begin{bmatrix} 1 & 1 & 0 & 1 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 \end{bmatrix}$$

Sol.

Ordered pairs:
{(1,1),(1,2),(1,4),(2,1),(2,3),(3,2),(3,3),(3,4),(4,1),(4,3),(4,4)}

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Note: Attempt question on question paper. All questions carry equal marks.

Roll#:_____   Student Signature:_____

Q1. Which of these relations on {0, 1, 2, 3} are partial orderings? Determine the properties of a partial ordering that the others lack.

a) {(0, 0), (1, 1), (1, 2), (2, 2), (3, 3)}
b) {(0, 0), (1, 1), (1, 2), (1, 3), (2, 2), (2, 3), (3, 3)}
Sol.
  a. **Partial order**
  b. **Partial order**

Q2) List the ordered pairs in the relations on {1, 2, 3, 4} corresponding to these matrices (where the rows and columns correspond to the integers listed in increasing order).

$$\begin{bmatrix} 1 & 1 & 1 & 0 \\ 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 1 \end{bmatrix}$$

Sol.

Ordered pairs:

{(1,1),(1,2),(1,3),(2,2),(3,3),(3,4),(4,1),(4,4)}

2

Date: 27-01-2025   *Max Marks: 02*   *Duration: 10 minutes*

Note: Attempt question on question paper. All questions carry equal marks.

Roll#:_____   Student Signature:_____

Q1. Which of these relations on {0, 1, 2, 3} are partial orderings? Determine the properties of a partial ordering that the others lack.

a) {(0, 0), (1, 1), (1, 2), (1, 3), (2, 2), (2, 3), (3, 3)}
b) {(0, 0), (0, 1), (0, 2), (1, 0), (1, 1), (1, 2), (2, 0), (2, 2), (3, 3)}
Sol.
    a. Partial order
    b. Not partial order

Q2) List the ordered pairs in the relations on {1, 2, 3, 4} corresponding to these matrices (where the rows and columns correspond to the integers listed in increasing order).

$$\begin{bmatrix} 0 & 1 & 0 & 1 \\ 1 & 0 & 1 & 0 \\ 0 & 1 & 0 & 1 \\ 1 & 0 & 1 & 0 \end{bmatrix}$$

Sol.
Ordered pairs:
{(1,2),(1,4),(2,1),(2,3),(3,2),(3,4),(4,1),(4,3)}