Saitechinfo NEET-JEE Academy

Terms

1. **One-to-one function**: A function where each element of the domain is mapped to a unique element in the co-domain.
2. **Onto-function**: A function where every element of the co-domain has at least one pre-image in the domain.
3. **Set-builder notation**: A mathematical notation used to define a set by stating the properties that its members must satisfy.
4. **Well-defined**: A term indicating that a function or relation satisfies its formal definition and behaves consistently across its domain.
5. **Many-to-one relation**: A relation where multiple elements of the domain map to the same element in the co-domain.

Symbols

1. **∈**: Belongs to (used in set theory, e.g., $a \in A$).
2. **⊂**: Subset of (e.g., $R \subseteq A \times B$).
3. **φ**: Empty set (used to denote a set with no elements).
4. **×**: Cartesian product (e.g., $A \times B$ forms all possible pairs of elements from sets A and B).
5. aRb: Denotes that a is related to b by the relation R.
6. ↔: Bi-conditional (if and only if).
7. →: Maps to (used in defining functions, e.g., $f : A \to B$).

Definitions

1. **Relation**: A relation R from set A to set B is a subset of the Cartesian product $A \times B$. A relation can pair elements of A with elements of B.
2. **Function**: A relation f is a function if every element of the domain A maps to exactly one element in the co-domain B.
3. **Domain**: The set of all possible inputs A for a relation or function.
4. **Co-domain**: The set B containing all possible outputs for a function or relation.
5. **Range**: The set of actual outputs of a function (subset of the co-domain).
6. **Reflexive Relation**: A relation R in set A is reflexive if $(a, a) \in R$ for all $a \in A$.
7. **Symmetric Relation**: A relation R in set A is symmetric if $(a, b) \in R$ implies $(b, a) \in R$.
8. **Transitive Relation**: A relation R in set A is transitive if $(a, b) \in R$ and $(b, c) \in R$ imply $(a, c) \in R$.
9. **Equivalence Relation**: A relation that is reflexive, symmetric, and transitive.
10. **Bijective Function**: A function that is both one-to-one and onto.
