

Key Notes

Chapter-01

Relation and Function

TYPES OF RELATIONS:

- A relation R in a set A is called reflexive if $(a, a) \in R$ for every $a \in A$.
- A relation R in a set A is called symmetric if $(a_1, a_2) \in R$ implies that $(a_2, a_1) \in R$, for all $a_1, a_2 \in A$.
- A relation R in a set A is called transitive if $(a_1, a_2) \in R$, and $(a_2, a_3) \in R$ together imply that $(a_1, a_3) \in R$.
- all $a_1, a_2, a_3 \in A$.

EQUIVALENCE RELATION

- A relation R in a set A is said to be an equivalence relation if R is reflexive, symmetric and transitive.

Equivalence Classes

- Every arbitrary equivalence relation R in a set X divides X into mutually disjoint subsets (A_i) called partitions or subdivisions of X satisfying the following conditions:
- All elements of A_i are related to each other for all i
- No element of A_i is related to any element of A_j whenever $i \neq j$
- $A_i \cup A_j = X$ and $A_i \cap A_j = \Phi$, $i \neq j$. These subsets (A_i) are called equivalence classes.
- For an equivalence relation in a set X , the equivalence class containing $a \in X$, denoted by $[a]$, is the subset of X containing all elements b related to a .

****Function: A relation $f: A \longrightarrow B$ is said to be a function if every element of A is correlated to a**

Unique element in B .

***A domain**

***B codomain**