1. Set

★ ROSTER METHOD :-

÷ In this Method, a set is described by listing elements separated by commus, within brass { }

For example : the set of vowels of English Alphabet may be described as {a, e, i, o, u}

★ SET BUILDER METHOD :-

★ TYPES OF SETS :-

1) EMPTY Set :-

÷ A set is said to be empty or null or void set, if it has no element and it denoted by ϕ or { }

☆ Singleton set :-

∴ A set consisting of a single element is called a singleton set

☆ Finite set :-

A set is called a finite set if it is either a void set or its elements can be listed by natural number 1, 2, 3...

☆ SUB-SET :-

Let A and B be two sets. If every element of set A is an element of B, then A is called a subset of B and we write $A \subseteq B$

☆ Power set

Two finite of all subsets of a set A is called the power set of A and is denoted by P(A).

Equal set :-

Two finite set are equal if element of A is a member of B and every element of B is a member of A i.e $A \subseteq B$ and $B \subseteq A$

Universal set :-

A set that contains all sets in a given context is called the universal set.

☆ Operations on sets

$A = \{1,2,3\}$ $B = \{3,5\}$ $C = \{1,5\}$

$A \cup B \cup C = \{1,2,3,5\}$

$A \cap B = \{3\}$

$A \cap C = \{1\}$

Disjoint sets :-

Two sets 'A' and 'B' are said to be disjoint if $A \cap B = \phi$

ex. $A = \{1,2\}$ $B = \{3,4\}$

$A \cap B = \phi$

A and B are disjoint sets

properties of set

- ✲ $A \cup U = A$
- ✲ $A \cap U = A$
- ✲ $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$
- ✲ $A \cup (B \cap C) = (A \cup B) \cap (A \cap C)$
- ✲ $(A \cup B)' = A' \cap B'$
- ✲ $(A \cap B)' = A' \cup B'$ .... (De Morgan's laws

- ✲ $A \cup A' = U$
- ✲ $A \cap A' = \phi$
- ✲ $(A')' = A$
- ✲ $\phi' = U$
- ✲ $U' = \phi$
- ✲ $A \cap (B \cap C) = (A \cap B) \cap C$
- ✲ $A \cup (B \cup C) = (A \cup B) \cup C$
- ✲ $A \cup \phi = A$
- ✲ $A \cap \phi = \phi$
- ✲ $A \cup A = A$
- ✲ $A \cap A = A$
- ✲ $n(A - B) = n(A) - n(A \cap B)$
- ✲ $n(B - A) = n(B) - n(A \cap B)$
- ✲ $n(A') = n(U) - n(A)$

Cardinal number or Cardinality of sets

- ✲ $n(A \cup B) = n(A) + n(B) - n(A \cap B)$
- ✲ $n(A \cup B \cup C) = n(A) + n(B) + n(C) - n(A \cap B) - n(B \cap C) - n(A \cap C) + n(A \cap B \cap C)$
- ✲ $n(A') = n(U) - n(A)$