NAKUL PANDIT
PGT (MATHS)

FUNCTIONS

1. FUNCTION AS A RELATION:

"A function is a relation in which no two ordered pairs have the same first components."

A function is denoted by f.

2. DOMAIN AND RANGE OF A FUNCTION:

The set of first components of the ordered pairs belonging to the function f is called domain of f and the set of second components is called the range of f.

Example:

Consider the relation R given by

$$\mathrm{R} = \{(1,2),(2,3),(3,4),(4,5)\}$$

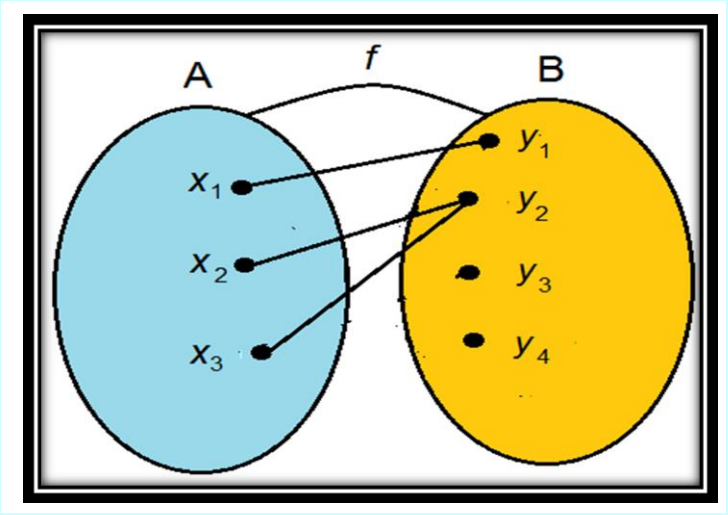
Since, no two ordered pairs have the same first components. So, R is a function.

Domain $= \{a: (a,b) \in \mathrm{R}\} = \{1,2,3,4\}$

Range $= \{b: (a,b) \in \mathrm{R}\} = \{2,3,4,5\}$

3. FUNCTION

Let A and B be any two non-empty sets. Then a rule or an association under which every element of A gets associated with a unique element of B , is called a function or mapping from set A to the set B.



Important Remarks:

(i) Every element of the set A must get associated to a unique (single) element of the set B.

(ii) Two or more elements of the set A may be associated with the same element of the set B.

(iii) There may be some elements in the set B, which are not assigned to any element of the set A.

(iv) A function may sometimes be represented by a formula.

4. DOMAIN AND CODOMAIN OF A FUNCTION

A function f defined from a set A to the set B is denoted by $f: \mathrm{A} \to \mathrm{B}$.
Here, the set A is called the domain and the set B is called Codomain.