

DAVV MBA PYQ

What is Set? Describe different types of sets.

OR

Define the following with suitable examples:

- Finite set
- Infinite set
- Universal set
- Power set
- Proper subset
- Cardinal Number

Solution.

Set:

A set is a collection of definite well defined objects.

A set is a collection of objects which are distinct from each other.

Construction of Set:

In construction of set, two methods are commonly used:

1. Roster Method (Enumeration): In this method we prepare a list of objects forming the set, writing the elements one after another between a pair of curly brackets.

For example:

$$A = \{a, b, c, d\}.$$

2. Description Method: In this method we describe the set in symbolic language.

For example:

A set of integer numbers which is divisible by 3 is written as,

$$A = \{x : x \text{ is an integer divisible by } 3\}$$

Types of Set:

1. Finite set : If a set consisting finite number of elements is known as finite set.

For example:

$$A = \{2, 4, 6, 8\}.$$

2. Infinite set : If a set consisting infinite number of elements is known as infinite set.

For example-

The set of all natural numbers.

$$A = \{1, 2, 3, \dots\}$$

3. Universal set : A Universal Set is the set of all elements under consideration, denoted by capital U. All other sets are subsets of the universal set.

4. Power set : The set of all subset of a set A, is known as power set of A.

For example:

$$A = \{a, b, c\}$$

Then

$$\text{Power set, } P(A) = \{\{\emptyset\}, \{a\}, \{b\}, \{c\}, \{d\}, \{ab\}, \{ac\}, \{ad\}, \{bc\}, \{bd\}, \{cd\}, \{abc\}\}$$

5. Proper subset : If B is the subset of A, and $B \neq A$, then B is proper subset of A.

For example:

$$A = \{1, 2, 3, 4, 5, 6, 7, 8\} \text{ and } B = \{2, 4, 6, 8\}$$

Then, $B \subset A$. (read as B is the proper subset of A)

6. Singleton set: If a set consisting only 1 element is known as singleton set.

For example:

$$A = \{a\}.$$

7. Equal sets: Two sets A and B consisting of the same elements is known as equal set.

For example:

$$A = \{a, b, c, d\} \text{ and}$$

$$B = \{a, b, c, d\}$$

8. Empty set: If a set consisting no elements is known as empty set or null set or void set.

For example:

$$A = \{ \emptyset \}$$

9. Subset: Suppose A is a given set, and any set B exist exist whose elements are also an element of A, than B is called subset of A.

For example:

$$A = \{1, 2, 3, 4, 5, 6, 7, 8\} \text{ and } B = \{2, 4, 6, 8\}$$

Than, $B \subseteq A$. (read as B is the subset of A)

Cardinal number:

The number of elements in a set is known as cardinal number. Cardinal number is represented by $n(A)$. Where A is set name.

For example: $A = \{1,2,3\}$ then,

$$n(A) = 3.$$