## Unit 2 logarithms

# 1. Define scientific notation.

A number written in scientific notation written as:

Here is called the coefficient or base number.

# 2. What is the logarithm of a real number?

The logarithm of a real number tells us how many times one number must be multiplied by itself to get another number.

The general form of a logarithm is: . Where

* is the base,
* is the result or the number whose logarithm is being taken, and
* is the exponent or the logarithm of to the base .

This means that .

**OR**

The logarithm of to the base is , means that when is raised to the power , it equals . The relationship between logarithmic form and exponential form is given below:

# 3. Define common logarithm or Brigg’s logarithm.

If the base of logarithm is taken as then logarithm is called common logarithm or Brigg’s logarithm. It is written as or simply as (when no base is mentioned, it is usually assumed to be base 10).

# 4. Define Natural logarithm.

Logarithm having base is called Napier logarithm or Natural logarithm.

# 5. Differentiate between characteristic and mantissa.

The integral part of the logarithm of any number is called the **characteristic** and the decimal part of the logarithm of a number is called the **mantissa** and is always positive.

For example, if then characteristic is and mantissa is

# 6. Define antilog.

The number whose logarithm is given is called antilogarithm. if , then is the antilogarithm of , or

In other words, **antilog is the inverse of a logarithm**.

# 7. What is the difference between Common and Natural Logarithms?

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| Common Logarithm | Natural Logarithm |
| The base of a common logarithm is . | The base of a natural logarithm is . |
| It is written as or simply when no base is specified. | It is written as . |
| Common logarithms are widely used in everyday calculations, especially in scientific and engineering applications. | Natural logarithms are commonly used in higher-level mathematics, particularly calculus and applications involving growth/decay processes. |