



# **SNS COLLEGE OF TECHNOLOGY**



**AN AUTONOMOUS INSTITUTION**

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**COIMBATORE**

## **DEPARTMENT OF CIVIL ENGINEERING**

**19GET102 – BASIC CIVIL AND MECHANICAL ENGINEERING**

**I YEAR / I SEMESTER**

**Unit 1 : Civil Engineering Materials and Surveying**

**Topic : Concepts of Levelling**



# Levelling



- Levelling or leveling is a branch of surveying, the object of which is to establish or verify or measure the height of specified points relative to a datum.
- It is widely used in cartography to measure geodetic height, and in construction to measure height differences of construction artifacts.
- Leveling is the general term applied to any of the various processes by which elevations of points or differences in elevation are determined.



# Principle of Levelling



- The principle of levelling is to obtain a horizontal line of sight at which the vertical distance of a point above or below this line of sight is found.

## The Purpose Of Levelling

The main purpose of balancing in the survey is:

- Find the heights of the given points in relation to the given data.
- Establishing points at given heights or at different heights in relation to given or considered data.



# Types of Levelling

1. Simple levelling
2. Differential levelling
3. Fly levelling
4. Profile levelling
5. Cross sectional levelling
6. Reciprocal levelling

There are two methods for obtaining the elevations at different points: -

1. Height of instrument (or plane of collimation) method
2. Rise and fall method



# Types of Levelling

## (A) Height of Instrument Method :-

The basic equations are :-

- Height of instrument for the first setting = RL of BM + BS(at BM)
- Subtract the IS and FS from HI to get RL of intermediate stations and change points.
- Checking:  $\sum BS - \sum FS = \text{Last RL} - \text{First RL}$ . This is -ve for FALL and +ve for RISE.

## (B) Rise and Fall method :-

- In this method the difference of the present staff reading is subtracted from the previous staff reading.
- Previous reading – present staff reading = +ve, denotes RISE
- Previous reading – present staff reading = -ve, denotes FALL
- Checking:  $\sum BS - \sum FS = \text{Last RL} - \text{First RL} = \sum \text{Rise} - \sum \text{Fall}$



***Thank You!!***