<h1 align="center">EXPERIMENT –7</h1>
<p align="center">(Determination of Constants of Tacheometer)</p>

OBJECTIVE: To determine the multiplying constant and additive constant of a given tacheometer.

EQUIPMENTS:
Tacheometer, Ranging Rods, Levelling Staff, Tape, Pegs

PROCEDURE:
The stadia interval factor (k) and the stadia constant (c) are known as tacheometric constants. Before using a tacheometer for surveying work, it is required to determine these constants. These can be computed from field observation by adopting following procedure.

Step 1: Set up the tacheometer at any station say P on a flat ground.

Step 2: Select another point say Q about 200 m away. Measure the distance between P and Q accurately with a precise tape. Then, drive pegs at a uniform interval, say 50 m, along PQ. Mark the peg points as 1, 2, 3 and last peg -4 at station Q.

Step 3: Keep the staff on the peg-1, and obtain the staff intercept say s_1.

Step 4: Likewise, obtain the staff intercepts say s_2, when the staff is kept at the peg-2,

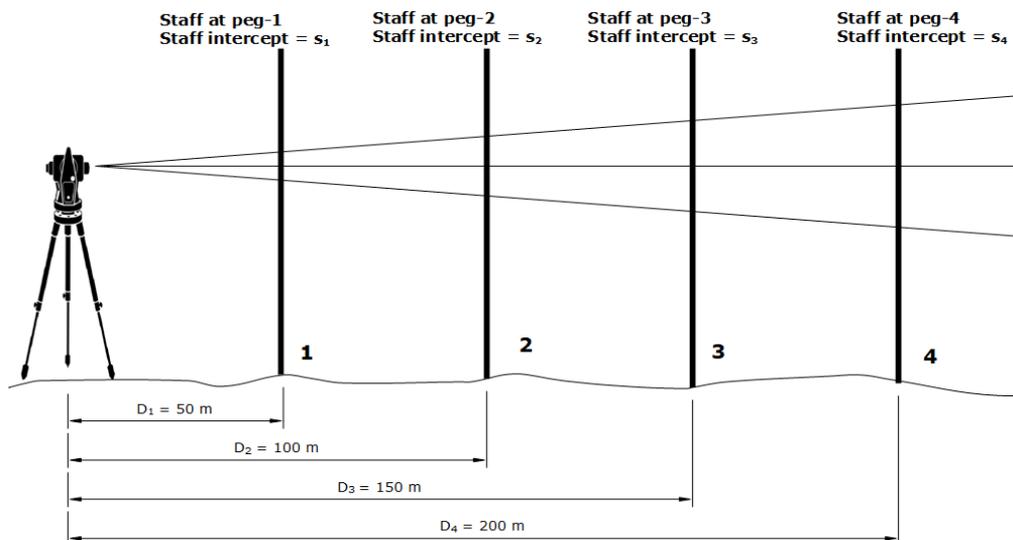**Step 5:** Form the simultaneous equations, using Equation $D = ks + c$

$$D_1 = k\, s_1 + c \quad \text{------------- (i) and}$$
$$D_2 = k\, s_2 + c \quad \text{------------- (ii)}$$

Solving Equations (i) and (ii), determine the values of k and c.

Step 6: Form another set of observations to the pegs 3 & 4, Simultaneous equations can be obtained from the staff intercepts s_3 and s_4 at the peg-3 and point Q respectively. Solving those equations, determine the values of k and c again.

Step 7: The average of the values obtained in steps (5) and (6) provide the tacheometric constants k and c of the instrument.

VIDEO LINK:

https://youtu.be/6TnX0gsEJWM

(Watch from 3:18 to 4:52 only)