



SNS COLLEGE OF TECHNOLOGY



AN AUTONOMOUS INSTITUTION

**Approved by AICTE New Delhi & Affiliated to Anna University Chennai
Accredited by NBA & Accredited by NAAC with “A++” Grade, Recognized by UGC**

COIMBATORE

DEPARTMENT OF CIVIL ENGINEERING

**23CEB202 - SURVEYING
II YEAR / III SEMESTER**

Unit 2 : Levelling

Topic 5 : Reduction Level



Problem No. 1

The following staff readings were observed successively with a level the instrument is moved by third, sixth and eighth readings. 2.228 :1.606 :0.988 :2.090 :2.864 :1.262 0.602 :1.982 :1.044 :2.684 m. Enter the reading in record book and calculate R.L. if the first reading was taken at a B.M of 432.384m

Instrument is moved by third, sixth and eighth readings.

2.228 :1.606 :0.988

2.090 :2.864 :1.262

0.602 :1.982

1.044 :2.684



$$HI = (RL + BS)$$

$$RL = (HI - IS / FS)$$

Station	BS	IS	FS	HI	RL	Remarks
1	2.228			434.612	432.384	BM
2		1.606			433.006	
3	2.090		0.988	435.714	433.624	3 rd CP
4		2.864			432.850	
5	0.602		1.262	435.054	434.452	6 th CP
6	1.044		1.982	434.116	433.072	8 th CP
7			2.684		431.432	
Σ	5.964		6.916			

Check: $\Sigma BS \sim \Sigma FS = \text{Last RL} - \text{First RL}$



Problem No. 2

The following readings were taken with a dumpy level and 4m levelling staff. The instrument was shifted after 3rd and 6th readings. The readings are 2.665, 3.225, 2.905, 1.85, 0.98, 2.62, 1.585, 0.96, 0.425. m Enter the above readings in a page of level book and calculate R.L. of points, if the first reading was taken with a staff held on B.M. of 240 m. use rise and fall method. Apply arithmetic checks



Problem No. 2

Station	BS	IS	FS	Rise (+)	Fall (-)	RL	Remarks
A	2.665					240.000	BM
B		3.225			0.560	239.440	
C	1.850		2.905	0.320		239.760	3 RD CP 1
D		0.980		0.870		240.630	
E	1.585		2.620		1.640	238.990	6 TH CP 2
F		0.960		0.625		239.615	
G			0.425	0.535		240.150	
Σ	6.100		5.950	2.350	2.200		
$\Sigma BS \sim \Sigma FS = \Sigma Rise \sim \Sigma Fall = Last RL \sim First RL$ $0.150 = 0.150 = 0.150$							



Problem No. 3



Solve the above problem no.2 in HI method



Q & A Session



How to calculate RL in

- 1. HI method**
- 2. R&F method**



Contouring – Methods – Characteristics and uses of contours



THANK YOU