

ASSIGNMENT: 6 TACHEOMETRIC SURVEY

- Q.1** Derive the expression for the horizontal and vertical distances in the fixed hair method when the staff is held vertically and the measured angle is that of elevation.
- Q.2** What is tacheometric surveying ? What are the advantages of tacheometric surveying ? Explain various methods of tacheometry.
- Q.3** What is tangential method of tacheometry? Derive the expressions for horizontal and vertical distances by the tangential method when both the angles measured are those of elevation.
- Q.4** Explain principle of stadia method.
- Q.5** The following observations were taken using a tacheometer fitted with an anallatic lens, the staff being held vertically. The constant of tacheometer is 100.

Inst. st.	Height of axis	Staff station	Vertical Angle	Hair readings	Remarks
P	1.45	B.M	- 6° 12'	0.98,1.54,2.10	R.L of B.M = 384.25 m
Q	1.45	Q	+ 7° 5'	0.83,1.36,1.89	
R	1.57	R	+12° 21'	1.89,2.48,3.07	

Determine the distances PQ and QR and the R.Ls of P,Q and R

- Q.6** During the course of a tacheometric survey, the following readings were recorded

Inst. st.	Height of axis	Staff station	Vertical Angle	Hair readings	Remarks
O	1.750	B.M	- 8° 24'	1.250, 1.600, 1.950	R.L of B.M = 312.670m
O	1.650	CP	- 7° 12'	1.430, 1.580, 1.730	
P	1.570	CP	+9° 36'	1.670, 1.950, 2.230	

The tacheometer was anallatic and the multiplying constant was 100. The staff was held vertical. Calculate the RL of station P.

- Q.7** To determine the gradient between two points P and Q, a tacheometer was set up at another station R and the following observations were taken, keeping the staff vertical.

Staff at	Vertical Angle	Hair readings
P	+4° 40'	1.210,1.510,1.810
Q	- 4° 40'	1.000,1.310,1.620

If the horizontal angle PRQ is 36°20', determine the average gradient between P and Q. Take A=100, B=0 and RL of HI=100 M.

Q.8 The following readings refer to a closed traverse ABCDA run by a tacheometer fitted with analyticons. The constant of the instrument was 100 and the staff was normal.

Line	Bearing	Vertical Angle	Staff interception
AB	40° 20'	+ 4 ⁰⁰ '	1.750
BC	310° 40'	+ 3 ¹⁰ '	1.480
CD	220° 00'	+ 2 ²⁰ '	1.670

Find the length and bearing of DA.

Q.9 Find the gradient from P to Q using the data given in Table

Inst. at	Staff at	Line	Bearing	Vertical Angle	Hair readings
A	P	AP	84 ⁰ 36'	3 ⁰ 30'	1.35, 2.10, 2.85
A	Q	AQ	142 ⁰ 24'	2 ⁰ 45'	1.9555, 2.875, 3.765

