15. (a) Determine the gradient from a point A to point B from the following observations made with a tachometer fitted with an analytic lens. The constant of the instrument was 100, Zero and the staff was held vertically.　(16)

Inst. station	Staff station	Bearing	Vertical angle	Staff Reading
P	A	134°	+10° 32'	1.360, 1.915, 2.470
	B	224°	+5° 6'	1.065, 1.885, 2.705

OR

(b) A tachometer was setup at a station C and the following readings were obtained on a staff was held vertically. K = 100 and C = 0.15.

Inst. Station	Staff station	Vertical angle	Staff Reading
C	BM	–5° 20'	1.150, 1.800, 2.450
C	D	+8° 12'	0.750, 1.500, 2.250

RL of BM 750.500. Calculate the horizontal distance CD and RL of D.　(16)

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Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. What is the Well conditioned triangles ?

2. List out the types of obstacles in chaining.

3. What is meant by local attraction ?

4. Define Isogonic line and Agonic line.

5. Explain the temporary adjustment of a dumpy level.

6. What is meant by Benchmark ? What are different types of Benchmarks ?

7. Write a formula for correction for curvature and refraction.

8. Define. : (i) Overhanging cliff (ii) Vertical cliff

9. What is meant by substance bar ?

10. What are the different systems of tachometer survey ?