

COLLEGE OF ENGINEERING, PUNE

S. Y. B. Tech. (Civil)

End-semester Examination, May, 2012

(CE - 205) Surveying-I

Day & Date: _____

Time: _____

[Max. Marks: 50]

Duration: 3 Hours

Instructions to candidates:

1. Answer any *five* questions
2. Neat diagrams must be drawn wherever necessary
3. Assume suitable data if necessary
4. Figures to the right indicate full marks
5. Use of non-programmable calculators is allowed

- Q.-1. a) Define surveying. What are the principles of surveying? Explain them briefly. (4)
 b) State step-wise procedure for measurement of direct angle and deflection angle. (6)

- Q.-2. a) Define the following: true meridian, local attraction, magnetic declination, dip of needle (4)
 b) The following staff readings were taken with a level. The instrument having been shifted after the 4th, 7th, and 10th readings. R. L. of the starting B. M. is 100.00 m. Enter the reading in the form of a level book page and reduce the level by the collimation method and apply the usual checks. (6)
 2.65, 3.74, 3.83, 5.27, 4.64, 0.38, 0.96, 1.64, 2.84, 3.48, 4.68 and 5.26.

- Q.-3. a) What are the various methods of resection? Explain method of resection after orientation by two points. (6)
 b) State the factors influencing the size of the triangle of error. (4)

- Q.-4. a) Define tacheometry. What are the various methods employed in tacheometric survey? Explain the method most commonly used. (4)
 b) Following observations were recorded with a tacheometer fitted with an anallactic lens ($K = 100; C = 0$). Calculate the reduced level of change point at station T. The staff was held vertical during observations and the reduced level of B. M. was 500.0 m. (6)

Instrument station	H. I. (m)	Staff station	Vertical angle	Staff readings (m)		
O	1.500	B. M.	$-4^{\circ} 30'$	1.250	1.400	1.550
O	1.500	C. P.	$+6^{\circ} 12'$	1.550	1.750	1.950
T	1.350	C. P.	$-7^{\circ} 45'$	1.390	1.550	1.710

- Q.-5. a) List the various methods of setting out a simple circular curve. Explain briefly the method of offsets from the long chord. (4)

- b) Two straights AI and BI meet at a chainage of 3450 m. A right handed simple circular curve of 250 m radius joins them. The deflection angle between the two straights is 50° . Tabulate the necessary data to layout the curve by Rankine's Method of deflection angles. Take the chord interval as 20 m. (6)

- Q.-6. Attempt any **two** from the followings: (10)

- a) Discuss in details, the methods of direct and indirect contouring.
- b) Explain with sketch, various elements of simple circular curve.
- c) Describe the two peg method of permanent adjustment of a dumpy level.
- d) Show that a parabola is an ideal vertical curve.