

B. Tech. Degree III Semester Examination November 2013

CE 1302 A/B SURVEYING I
(2012 Scheme)

Time : 3 Hours

Maximum Marks : 100

PART A
(Answer ALL questions)

- (8 x 5 = 40)
- I. (a) What is magnetic declination? Explain briefly variations in declination.
 (b) Explain the method of chaining on sloping ground.
 (c) What is reciprocal levelling?
 (d) Explain the characteristics of contours
 (e) Derive an expression for Simpson's one-third rule for areas.
 (f) What is mass diagram? List the characteristics of mass diagram.
 (g) Explain the method of measuring direct angles for a closed traverse in theodolite traversing.
 (h) Explain the principle of anallatic lens.

PART B

(4 x 15 = 60)

- II. (a) What is meant by ranging? Explain the various methods for ranging out of survey lines (7)
 (b) State three point problem. Explain any two methods for solving three point problem. (8)

OR

- III. The bearing observed in traversing with a compass at a place where local attraction was suspected are given below: (15)

<i>Line</i>	<i>Forebearing</i>	<i>Back bearing</i>
AB	S 45° 30' E	N 45° 30' W
BC	S 60° 00' E	N 60° 40' W
CD	N 03° 20' E	S 05° 30' W
DA	S 85° 00' W	N 83° 30' E

At what stations do you suspect local attraction? Find the corrected bearings of the lines.

- IV. The following consecutive readings were taken with a level and a 4m staff on a continuously sloping ground at a common interval of 30m. (15)
 0.780, 1.535, 1.955, 2.430, 2.985, 3.480, 1.155, 1.960, 2.365, 3.640, 0.935, 1.045, 1.630 and 2.545. The reduced level of the first point A was 180.750m. Rule out a page of a level field book and enter the above readings. Calculate the reduced levels of the points by rise and fall method. Also calculate the gradient of the line joining the first and the last points.

OR

- V. (a) Describe the various methods of locating contours. (9)
- (b) Briefly explain the permanent adjustments of a dumpy level. (6)

- VI. (a) The following table gives the corrected latitude and departure (in metres) of the sides of a closed traverse PQRS. (10)

<i>Side</i>	<i>Latitude</i>		<i>Departure</i>	
	N	S	E	W
PQ	128		9	
QR	15		258	
RS		143	9	
SP	0			276

Compute its area by

- (i) Meridian distance method
- (ii) Total latitude and departure method.
- (b) Explain the working of Ceylon ghat tracer. (5)

OR

- VII. (a) A railway embankment is 12m wide. The ground is level in a direction transverse to the centre line. Calculate the volume contained in a 100m length by trapezoidal rule and prismoidal rule, if the side slope is 1.5:1. The centre heights at 20m interval are 3.7m, 2.6m, 4.0m, 3.4m, 2.8m, 3.0m, 2.2m. (10)

- (b) Explain the working of Indian Pattern Clinometer. (5)

- VIII. A leveling staff is held vertical at distances of 100m and 300m from the axis of a tacheometer and the staff intercept for horizontal sights are 0.99m and 3.00m respectively. Find the constants of the instrument. The instrument is set up at station A and the staff is held vertical at a point B. With the telescope inclined at an angle of depression of 10° to the horizontal, the readings on the staff are 2.670, 1.835, 1.000m. Calculate the R.L. of B and its horizontal distance from A. The H.I. is 1.42m and R.L. is 450.5m. (15)

OR

- IX. Explain the temporary and permanent adjustments of a theodolite. (15)
