

B.E. (Full Time) DEGREE END SEMESTER EXAMINATIONS, APRIL / MAY 2011

GEOINFORMATICS ENGINEERING BRANCH

THIRD SEMESTER - (REGULATIONS 2008)

GI 9201 – SURVEYING I

27

Time: 3 Hours

Maximum Marks: 100

INSTRUCTIONS:

1. Answer ALL questions under Part-A and B respectively
2. Assume suitable data wherever necessary
3. Draw neat sketches wherever desirable

PART - A (10 x 2 = 20 Marks)

1. Mention the basic principles of Surveying.
2. What is well conditioned triangle? Why is it required?
3. The length of AB measured with a 20 metre chain was found to be 841.5 m. Calculate the true length of the line if (i) the chain was 10 cm long and (ii) the chain was 10 cm short.
4. The magnetic bearing of a line AB is S 38° 30' W. Calculate the true bearing if the magnetic declination is (i) 4° 30' W and (ii) 3° 30' E.
5. State the use of various accessories used in plane table surveying.
6. Mention the demerits of plane table surveying over the other methods of surveying.
7. Bring out the temporary adjustment of a Tilting level.
8. What considerations would you have while selecting the contour interval?
9. On a levelling instrument, the bubble moves through 2 divisions of 2mm each for a change of inclination of 25 seconds. Find the radius and sensitivity of the bubble tube.
10. What is prismatic correction?

PART - B (5x16 = 80Marks)

11. (i) What is Surveying? What are its uses? (5)
(ii) Distinguish between plane and geodetic Surveying. (5)
(iii) What are the works of the Surveyor? (6)
- 12.a.i. Explain the use and working of a line ranger. (6)
ii. A steel tape 30m long standardized at 27°C with a pull of 50N was used for measuring a baseline. Compute the correction for a tape length if the temperature in the field is 22°C and the pull applied is 85N. Weight of one cubic meter of steel is 78 KN; Weight of the tape is 7N, Coefficient of thermal expansion for the steel is $12 \times 10^{-6}/^{\circ}\text{C}$ and Young's modulus is $2 \times 10^5 \text{ N/mm}^2$ (10)

(OR)

- 12.b.i. Mention the various methods of determining the width of the river and explain any one of them. (6)
- ii. A and B are two Points on the opposite sides of a pond. The surveyor establishes a line AC clear of the pond such that B is visible from C. He also establishes another point D on the line CB produced so that the line AD is also clear of the pond. If the distances AC, CB, BD and DA were measured and found to be 300m, 150m, 175m and 250m respectively. Determine the distance AB. (10)

- 13.a.i. Explain the Bowditch rule for adjusting a compass traverse. (6)
- ii. In a closed traverse ABCDE, the bearing of the line AB was measured as $150^{\circ} 30'$. The included angles were measured as under
 $LA = 130^{\circ} 00'$; $LB = 90^{\circ} 00'$; $LC = 125^{\circ} 30'$; $LD = 135^{\circ} 30'$; $LE = 59^{\circ} 00'$
 Calculate the bearing of all other lines and also check it. (10)

(OR)

- 13.b. What is three point problem? How is it solved by trial & Error and Bessel's method? (16)

- 14.a. The following staff readings were observed successively with a level, the instrument was shifted after fifth and eleventh readings.
 0.585, 1.010, 1.735, 3.295, 3.775, 0.350, 1.300, 1.795, 2.575, 3.375, 3.895, 1.735, 0.635 and 1.605metres
 Enter the above readings in a page of a level field book and calculate the reduced levels of points by rise and fall method if the first reading was taken with a staff held on a Bench Mark of 136.440m. (16)

(OR)

- 14.b. The following consecutive readings were taken with a dumpy level and a 4m levelling staff on a continuously sloping ground at 30m intervals,

0.680, 1.455, 1.855, 2.330, 2.885, 3.380, 1.055, 1.860, 2.265, 3.540, 0.835, 0.945, 1.530, and 2.250.

The R. L. of the starting point was 100.000m, Determine the gradient of the line joining the first and last point. (16)

15. a.i. Bring out the uses of contour maps. (6)
- ii. What is profile levelling? Describe the procedure for conducting the profile levelling for a proposed highway. (10)

(OR)

- 15.b, In a proposed Hydro-electric project, a storage reservoir was required to provide a storage of 4.5million m^3 between the lowest drawdown(LDD) and the top water level(TWL). The area contained within the stated contours and upstream face of the dam were as follows.

Contour(m)	100	95	90	85	80	75	70	65
Area (ha)	30	25	23	17	15	13	7	2

If LDD was to be 68cm, calculate the TWL for

(i) Full storage capacity,

(ii) 60%full storage capacity.

(Use end area method for calculating volumes)

(16)