T 8090

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2006.

Fourth Semester

Civil Engineering

CE 1254 — SURVEYING — II

(Regulation 2004)

Time : Three hours Maximum : 100 marks

Draw neat sketches wherever necessary.

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Compare the merits of Anallactic Telescope and the simple external focusing telescope.

2. Explain the use of Subtense Bar.

3. Give the specifications of First Order Triangulation.

4. Name the different corrections to be applied to the length of a Base Line.

5. Explain the Horizontal and Vertical Controls in Hydrographic survey.

6. Name the different equipments needed for soundings.

7. What are the kinds of errors possible in survey work?

8. What is the weight of an observation?

9. What are the corrections to be applied to the observed altitude of sun?

10. Explain the need for overlap in aerial Photography.

PART B — (5 × 16 = 80 marks)

11. (a) (i) Explain the different systems of tacheometric survey. (6)

(ii) A theodolite has a tacheometric multiplying constant of 100 and an additive constant of zero. The centre reading on a vertical staff held at point B was 1.292 m when sighted from A. If the vertical angle was + 15° and the horizontal distance AB 175.416 m, calculate the other staff readings and show that the two intercept intervals are

not equal. Using these values, calculate the level of B if A
27.550 m angle of depression and the height of the instrum
1.5 m.

Or

(b) (i) Explain the use and advantages of following instruments
tacheometry :

(1) Beaman Stadia Arc

(2) Zeiss Electronic Tacheometers. (4 +

(ii) Explain the theory and deduce the fundamental formula
tangential tacheometry.

12. (a) (i) Explain the criterion of strength of a figure with reference to a w
conditioned triangle.

(ii) A tape 20 m long of standard length at 29°C was used to measure
line, the mean temperature during measurement being 19°C. T
measured distance was 882.10 meters, the following being t
slopes : 2° 20' for 100 m ; 4° 12' for 150 m ; 1° 6 ' for 50 m ; 7° 48' f
200 m ; 3° 00' for 300 m ; 5° 10' for 82.10 m ; Find the true length
the line if the coefficient of expansion is 6.5×10^{-6} per degree F.

Or

(b) Write short notes on :

(i) Opaque signals

(ii) Selection of site for Base line

(iii) Satellite station

(iv) Base net.

13. (a) (i) What is meant by "triangulation adjustment"? Explain the differen
conditions and cases with sketches.

(ii) The angles of a triangle ABC were recorded as follows :

A = 77° 14' 20" Weight 4

B = 49° 40' 35" Weight 3

C = 53° 04' 52" Weight 2

Give the corrected values of the angles. (8)

Or

(b) (i) Given the general rules for the adjustments of a geodetic triangle. (8)

(ii) Given the following equations :

A = 42° 36' 28" weight 2 B = 28° 12' 42" weight 2
C = 65° 25' 16" weight 1 A + B = 70° 49' 14" weight 2
B + C = 93° 37' 55" weight 1

Find the most probable values of A, B and C. (8)

(a) (i) Explain the following :

(1) Equation of time

(2) Sidereal time. (4 + 4)

(ii) What are the corrections to be applied when determining the true altitude of a star? (8)

Or

(b) (i) Explain celestial coordinate system. (5)

(ii) Explain the use of nautical almanac. (5)

(iii) Explain the correction needed for observation to sun to determine the azimuth of a line. (6)

15. (a) What do you understand by "Tides"? How do they form? Explain "Lunar Tides" and "Solar Tides". Explain the effects of tides. (16)

Or

(b) (i) What is a "three point problem" in hydrographic surveying? What are the various solutions for the problem? Explain. (9)

(ii) What is Echo-sounding? Explain the advantages. (7)
