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B.E / B.Tech (Full Time) DEGREE

EXAMINATIONS, APRIL / MAY 2014

AGRICULTURE AND IRRIGATION ENGINEERING

THIRD SEMESTER

AI 8302 SURVEYING

(Regulation 2012)

Time: 3 Hours

Answer ALL Questions

Max. Marks 100

Part A (10 X 2 = 20)

1. Outline the importance of baseline in surveying?
2. What are compensating errors?
3. What are the accessories of plane tabling?
4. Define magnetic declination.
5. What do you mean by permanent adjustment in Theodolite?
6. How are stadia constant of a Theodolite estimated in ground?
7. Illustrate single plane method in deriving the height of a tower?
8. *What is a bench mark?*
9. *What is meant by contour?*
10. What is local attraction?

Part B (5 X 16 = 80)

11. What are the different sources of errors in theodolite surveying? Explain at least four and also the ways to minimize or eliminate them?
12. a) A steel tape was exactly 30m long at 20° C when supported throughout its length under a pull of 10 kg. A line was measured with this tape under a pull of 15kg and at a mean temperature of 32°C and found to be 780m long. The cross-sectional area of the tape = 0.03cm² and its total weight = 0.693 kg, α for steel = 11×10^{-6} per °C and E for steel = 2.1×10^6 kg/cm². Compute the true length of the line if the tape was supported during measurement (a) at every 30m (b) at every 15m.

(OR)

- b) i) Explain the "Adjustment of chain". (8)
- ii) Explain the "Testing a Chain". (8)

13. a) What are the methods of Plane tabling? Describe the "Intersection method", with a neat sketch.

(OR)

b) The following bearings were observed in traversing with a compass, an area where local attraction was suspected. Find the amounts of local attraction at different stations, the correct bearings at lines and the included angles

Line	FB	BB
AB	68° 15'	248° 15'
BC	148° 45'	326° 15'
CD	224° 30'	46° 0'
DE	217° 15'	38° 15'
EA	327° 45'	147° 45'

14. a) The following consecutive readings were taken with a levelling instrument of intervals of 20m. 2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255 and 3.630m. The instrument was shifted after the fourth and eight readings. The last reading was taken on a B.M of R.L 110.200m. Find the R.Ls of all the points. Using Rise and Fall system. And find out the average gradient between the ends.

(OR)

b) Explain the procedure involved in 1. Extending a straight line, 2. Finding out the intersection of two straight lines, 3. Laying off horizontal angles and 4. Establishing a line beyond obstruction, using a theodolite.

15. a) A transit Theodolite was set up at a distance of 200m from a chimney and angle of elevation to its top was $10^{\circ} 48'$. The staff reading on a BM of RL is 70.250m with the telescopic horizontal 0.977. Find the RL of the top of the Chimney. Also explain the method to be adopted when the top of the chimney is not accessible.

(OR)

b) Explain various methods of interpolating the contours.
