S - 884

Total No. of Pages : 3

Seat No.	

S.E. (Civil) (Part - I)(Semester - III) Examination, Dec. - 2013

SURVEYING - I

Sub. Code :42655

Day and Date : Thursday, 19- 12 - 2013 **Total Marks : 100**

Time :10.00 a.m. to 1.00 p.m.

Instructions :
1) **Answer any THREE questions from EACH section.**
2) **Figures to the right indicate full marks.**
3) **Assume suitable data if necessary and state them clearly.**
4) **Answers shall be supported by adequate sketches.**

SECTION - I

Q1) a) Explain Reciprocal levelling with reference to its
i) Purpose.
ii) Situation where it is preferred.
iii) Field procedure and relevant equations. **[6]**

b) What do you understand by the term interpolation of Contours? Explain the usual method of interpolation of contours with an illustration. **[6]**

c) Explain traversing method of plane table Survey. **[5]**

Q2) a) A levelling instrument was set up exactly midway between two pegs P and Q 100 m apart. The staff readings on P and Q were 1.875 m and 1.790 m respectively. The instrument was then set up at a distance of 10 m from P on the line QP. The corresponding staff readings were 1.630m and 1.560m. Calculate the correct staff readings on P and Q when the line of Collimation is exactly horizontal. **[8]**

b) What is the purpose of precise levelling? Give the special features of precise level and precise levelling staff. **[8]**

P.T.O.

Q3) a) A planimeter was adopted to measure an area in a map drawn to a convenient scale. The description of planimeter is as under. Length of tracing arm is 160 mm, length of anchor arm is 159 mm, distance between hinge and wheel is 16 mm, diameter of wheel is 20 mm, initial reading is 1250 and final reading is 3750. The zero of counting disc crosses the index mark clockwise 17 times and anticlockwise 7 times. Calculate the area when i) anchor point is outside the map and wheel is beyond the hinge.ii) anchor point is inside the map and wheel is beyond the hinge. **[10]**

b) What are the effects of earth's curvature and atmospheric refraction on staff readings in levelling operations. Derive an expression for combined correction due to curvature and refraction. **[7]**

Q4) Write notes on the following: **[16]**

a) Two point problem.

b) Factors affecting Sensitivity of bubble tube.

c) Characteristics of Tilting level.

d) Direct contouring.

SECTION-II

Q5) a) Draw a neat sketch showing suitable portion of main scale and complete vernier scale of the horizontal plate of a transit theodolite when the reading on vernier 'B' is 268° 20' 40". **[6]**

b) Explain with a neat diagram the measurement of horizontal angle by the method of repetition and the errors eliminated by doing so. **[6]**

c) Describe the procedure of measuring the magnetic bearing of a line by a transit theodolite. **[5]**

Q6) a) Following records were obtained in a traverse survey, where the length and bearing of the last line were not recorded. Compute the length and bearing of the line DA.

Line	AB	BC	CD	DA
Length (m)	75.50	180.50	60.25	?
Reduced Bearing	N30°24' E	S69°24' E	S30°30' W	?

[8]

b) How would you test whether the horizontal axis and the line of collimation of a transit theodolite are perpendicular to each other? Describe the Procedure for adjustment if they are not. [8]

Q7) a) In order to determine the elevation of top of a hill, a flag-mast of 2 m height was erected and observations were made from two stations P and R 60 m apart. The horizontal angle measured at P between R and the top of the flag-mast was 60° 30' and that measured at R between the top of the flag-mast and P was 68°18'. The angle of elevation to the top of the flag-mast was measured to be 10°48' at R and the same was measured to be 10°12' at P. Staff readings on BM of RL 435.065 m when the instrument was at P was 1.965m and that with instrument at R was 2.055m. Calculate the elevation of top of the hill. [8]

b) Discuss the methods available for distributing error in consecutive coordinates for a theodolite traverse. [8]

Q8) a) What is hydrographic surveying? Write a note on Nantical Sextant used in hydrographic Surveying. [6]

b) Describe the construction and use of ceylon Ghat Tracer. [5]

c) Explain with a neat sketch the method of transferring centre line alignment inside a tunnel. [6]

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