

Civil

COLLEGE OF ENGINEERING, PUNE

S. Y. B. Tech. (Civil)

End-semester Examination, April-May, 2013

(CE - 202) Surveying-I

[Max. Marks: 50]

Duration: 3 Hours

Day: 25/04/2013

Date: Thursday

Instructions to candidates:

1. Answer any **five** questions
2. Neat diagrams must be drawn wherever necessary
3. Assume suitable data if necessary
4. Figures to the right indicate full marks
5. Use of non-programmable calculators is allowed

- Q.-1. a) A traverse was run with a prismatic compass and the lengths and bearings of the lines observed are given below. Check whether or not the traverse closes. If not, balance it using Bowditch's rule. (10)

| Line | AB | BC | CD | DA |
|---------|------------------------|-----------------------|-----------------------|-----------------------|
| Length | 105.8 | 142.5 | 188.8 | 188.9 |
| Bearing | N40 ⁰ 45' W | N51 ⁰ 30'E | S48 ⁰ 15'E | S76 ⁰ 45'W |

- Q.-2. a) The consecutive readings taken during a levelling operation are as follows: 0.685, 1.315, -1.825, -0.635, 1.205, 1.235, 2.631, 1.355, -2.015. The instrument was shifted after the third and sixth readings. The third reading was taken to a benchmark of assumed elevation 100.000. Find the reduced levels of other points. (6)

- b) Describe permanent adjustment of a level to make the line of collimation parallel to the bubble tube axis. What is achieved by this method? (4)

- Q.-3. a) Explain in details with sketches various methods of locating contours. (5)

- b) A tachometer is set-up at an intermediate point on a traverse course AB and the following observations are taken on a staff held vertically. The instrument is fitted with an anallatic lens, and the multiplying constant is 100. The reduced level of A being given as 350.75 m., calculate the length of AB and the reduced level of B. (5)

| Staff Station | Bearing | Vertical Angle | Intercept | Axial Hair Reading |
|---------------|----------------------|---------------------|-----------|--------------------|
| A | 40 ⁰ 35' | -4 ⁰ 24' | 2.172 | 1.962 |
| B | 220 ⁰ 35' | -5 ⁰ 12' | 1.986 | 1.866 |

- Q.-4. a) Explain step-wise procedure to measure horizontal angle by repetition method and by reiteration method. (5)

- b) Describe the spire test for the permanent adjustment of a theodolite. Why is this test needed? (5)

- Q.-5 a) Explain in brief use of Lehmann's Rule and Strength of Fix in three-point problem? (5)

- b) What are the methods of plotting of closed traverse? Explain plotting by Rectangular Coordinate methods in details. (5)
- Q.-6 a) What is transition curve? State the various types of transition curve with the help of neat sketch? (4)
- b) Two tangents intersect at chainage 1190 m., the deflection angle being 36° . Calculate all the data necessary for setting out a curve with radius of 300 m. by deflection angle **or** offset from chord, the peg interval is 30 m. (6)

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