

178

S.E Civil III CBGS

Surveying - I

16.12.15
QP Code : 5244

(3 Hours)

[Total Marks : 80

- N. B. :
- (1) Question No. 1 is compulsory.
 - (2) Attempt any **three** question out of remaining questions.
 - (3) Illustrate answers with neat sketches wherever required.
 - (4) Attempt sub-question in order.
 - (5) Assume any suitable data if required and state the same clearly.

1. Attempt any four :- 20
- (a) Explain the principle of surveying.
 - (b) Differentiate between surveyors and prismatic compass.
 - (c) Explain temporary adjustments of dumpy level.
 - (d) Enlist the advantages and disadvantages of plane table surveying.
 - (e) Procedure for direct measurement of horizontal angle using theodolite.
2. (a) What is bearing of a line? Explain different types of bearings. 4
- (b) Explain the methods of adjusting and testing the chain. 8
- (c) The following bearings was taken while conducting a close traverse with a compass in a place there local attraction was suspected. At what stations do you suspect local attraction? Find the corrected bearings for local attraction and for declination of $1^{\circ}30' w$ 8

Line	FB	BB
AB	$80^{\circ}45'$	$260^{\circ}00'$
BC	$130^{\circ}30'$	$311^{\circ}35'$
CD	$240^{\circ}15'$	$60^{\circ}15'$
DA	$299^{\circ}30'$	$110^{\circ}10'$

3. (a) Explain Differential levelling & reciprocal levelling. 10
- (b) The following consecutive readings were taken with a level and 4.0 m staff on a continuously sloping ground at a common interval of 30 mt 0.780, 1.535, 1.955, 2.430, 2.985, 3.480, 1.155, 1.960, 2.365, 3.640, 0.935, 1.045, 1.630, and 2.545. 10
- The RL of first point A was 180.75 m. Rule out a page of level book & enter above readings. Calculate the RL of all the points by Rise & Fall method. Also calculate the gradient of the line joining the first & last point.

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S.E. Civil III EBSGS

Surveying - I 2

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2

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4. (a) What is contour? Explain the different characteristics of contour also explain different methods of interpolating contours along with suitability of each one of them. 7
- (b) The length of tracing arm of a planimeter is 15.92 cm. The distance from the hinge to the anchor point is 16.0 cm. The diameter of the rim of the wheel is 2 cm. The wheel is placed outside at a distance of 3.0 cm from the hinge. Calculate area corresponding to revolution of the wheel and the area of zero circle. 7
- (c) The following perpendicular offsets were taken from a chain line to an irregular boundary. Calculate the area using trapezoidal and Simpson's rule. 6
- | | | | | | | | | |
|--------------|---|------|------|------|------|------|------|------|
| Chainage (m) | 0 | 30 | 60 | 90 | 120 | 150 | 180 | 210 |
| Offsets (m) | 0 | 2.65 | 3.80 | 3.75 | 4.65 | 3.60 | 5.00 | 5.18 |
5. (a) In a four-sided closed traverse ABCDA, the following information is given. 12

Side	Length (mt)	Deflection angle	Bearing	Co-ordinates
AB	160	?	S40° W	?
BC	340	116(L)	?	26500 S Point B 22400 W
CD	210	60°(L)	?	
DA	?	?	?	?

Fill in the missing data.

- (b) Explain in detail the procedure for solving two-point problem on field of plane table surveying. 8
6. Explain any four :- 20
- Gales table
 - Local attraction and its eliminations
 - Method of calculation of earthwork by spot level
 - Errors in chaining
 - Ranging and its methods.
 - Measurement of deflection angle between two points using theodolite.

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