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SE-6141

B. E. II (Sem. III) (Civil) Examination

April / May – 2011

Surveying - I

(Old Syllabous)

Time : **3** Hours] [Total Marks : **100**

Instructions :

(1)

નીચે દર્શાવેલ ☛ નિશાનીવાળી વિગતો ઉત્તરવહી પર અવશ્ય લખવી.
Fillup strictly the details of ☛ signs on your answer book.

Name of the Examination :

☛ **B. E. 2 (Sem - 3) (Civil)**

Name of the Subject :

☛ **Surveying - 1**

☛ Subject Code No. : **6 1 4 1** ☛ Section No. (1, 2,.....) : **Nil**

Seat No. :

Student's Signature

(2) Figures to the right indicate full marks.
(3) Assume suitable data if required and mention them clearly.
(4) Draw neat and labelled sketch wherever required.
(5) Use of non-programmable calculator is permitted.

1 Write short notes on any **two** : **10**

(a) Advantages and disadvantages of plane tabling.
(b) Hydrographic survey
(c) Methods of balancing a traverse.

2 (a) What are the various permanent adjustments of a theoolite ? Explain any one. **10**

(b) What is setting up the plane-table ? What is the most accurate method of Orientation ? **10**

OR

(b) Give the description of a plane table. Enumerate the various accessories used in plane tabling with their functions. **10**

3 (a) Co-ordinate of two points A and B are given below. A third point C has been chosen in such a way that bearings of AC and CB are 29°30' and 45°45' respectively. Calculate the length of AC and CB :

Point	Northing	Easting
A	150	200
B	1500	1300

(b) What are the various methods of locating roundings ? Explain any one. **10**

OR

(b) How roundings are carried out ? What are the equipments needed for rounding ? **10**

4 Explain in brief : (any **three**) **6**

(1) Limitations of Simpson's rule

(2) Multiplier constant of planimeter

(3) Curvature correction

(4) Degree of curve

5 Solve any **four** : **24**

(1) The following prependicular offsets were taken at 10 m intervals from a survey line to an irregular boundary line ; 3.25, 5.60, 4.20, 6.65, 8.75, 6.20, 3.25, 4.20, 5.65

Calculate the area enclosed between the survey line, the irregular boundary line, the first and last offsets by the application of (a) average ordinate rule, (b) trapezoidal rule.

(2) The following observations were made with a planimeter.

Area	**I.R.**	**F.R.**	**N**
(1) Known area of 60 sq. inches	2.326	8.286	0
(2) Unknown area	8.286	5.220	+1

The anchor point was placed outside the figure in both the cases with the same setting of the tracing area. Calculate :

(1) The multiplier constant

(2) The unknown area.

(3) A railway embankment 400 m long is 12 m wide at the formation level and has the side slope 2 to 1. The ground levels at every 100 m along the centre line are as under :

Distance	0	100	200	300	400
R.L.	204.8	206.2	207.5	207.2	208.3

The formation level at zero chainage is 207.00 and the embankment has a rising gradient of 1 in 100. The ground is levelled across the centre line. Calculate the volume of earthwork.

(4) Two tangents AB and BC intersect at a point B at chainage 150.5 m. Calculate all the necessary data for setting out a circular curve of radius 100 m and deflection angle 30^{o} by the method of offsets from the long chord.

(5) If the tangent distance of a curve is 235.6 m and the deflection angle is 42^{o}, calculate the other parameters of the curve, such as length of long chord, lenght of curve, apex distance & mid-ordinate.

6 Attempt any **four** : **20**

(1) Derive relation between radius and degree of curve.

(2) Explain : "Trapezoidal Formula"

(3) Discuss the types of level section with neat sketch.

(4) Write short note on "Types of curves"

(5) Explain : Axis-signal correction, Coefficient of refraction.
