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RN-6141

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

May / June – 2010

Surveying

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**

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

Seat No. :

Student's Signature

(2) Attempt **two** sections in **separate** answer books.

(3) Figures to the right indicate full marks.

(4) Assume suitable data wherever necessary.

(5) Draw neat sketch to support your answer.

SECTION - I

1 (a) Write the correct answers : **10**

(i) A theodolite in which the telescope can be revolved through a complete revolution in a vertical plane is known as a _____.

(a) Non-transit theodolite
(b) Tilting theodolite
(c) Transit theodolite

(ii) Theodolite is an instrument used for _____

(a) Measurement of bearings only
(b) Measurement of horizontal angles only
(c) Measurement of vertical angles only
(d) All the above

(iii) The operation of revolving the telescope in a vertical plane about its vertical axis is called _____.

(a) Swinging
(b) Transiting
(c) Face right
(d) Face left

(iv) For improved accuracy the included angle is measured by the _____.

(a) Reiteration method

(b) Repetition method

(c) Deflection angle method.

(v) the height of instrument (H.I) in levelling is the _____.

(a) height of telescope axis above the ground

(b) elevation of line of sight with respect to a datum.

(c) elevation of line of sight with respect to M.S.L.

(d) None of above

(vi) The surface perpendicular to the direction of the gravity is a _____

(a) horizontal surface

(b) level surface

(c) horizon

(d) none of above

(vii) The B.M. fixed at the end of a day's work is called the _____.

(a) Permanent B.M

(b) Arbitrary B.M.

(c) Temporary B.M.

(viii) The plane table map cannot be plotted to a different scale, as there is no _____.

(a) long book

(b) level book

(c) field book

(d) note book

(ix) The principle of plane table is _____.

(a) Parallelism

(b) Triangulation

(c) Traversing

(x) Inaccessible points may be located by the _____

(a) Resection method

(b) Intersection method

(c) Radiation method.

(b) Attempt any **two** : **10**

(i) Discuss the temporary adjustment of a dumpy level.

(ii) What is contour? Discuss the characteristics of it with suitable sketches.

(iii) In an operation involving reciprocal levelling, two points A and B are taken on opposite banks of a river. When the level was set up near A, the staff readings on A and B were 2.245 and 3.375 respectively. When the level was set up near B, the respective staff readings were 1.955 and 3.055. Find the true difference of level between A and B. What is the R.L. of B, if that of A is 125.550?

2 (a) Describe the process of measuring the horizontal angle. **6**

OR

(a) Enlist the sources of errors in a theodolite survey.

(b) The following records are obtained in a traverse survey, where the length and bearing of the lost line were not recorded : **7**

Line	Length (m)	Bearing
AB	75.50	30° 24'
BC	180.50	110° 36'
CD	60.25	210° 30'
DA	(?)	(?)

Compute the length and bearing of line DA.

3 (a) Write the functions of a theodolite. **3**

(b) Attempt any **two** : **14**

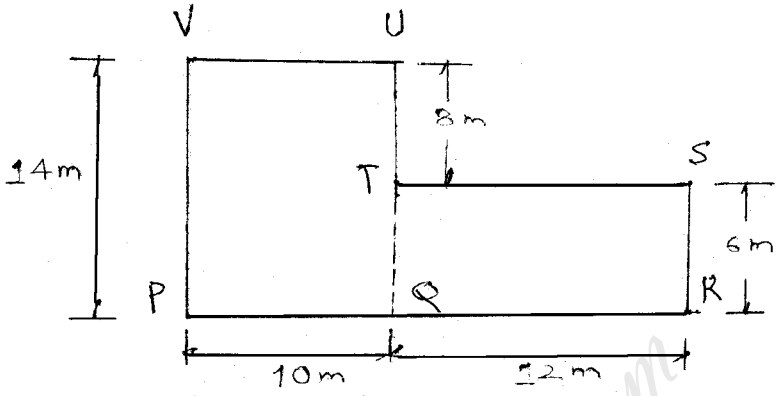
(i) Describe the procedure of setting up the plane table over a station.

(ii) What are the methods of plane tabling? Describe any one of them with a sketch.

(iii) Differentiate between radiation and intersection method.

SECTION - II

4 (a) Explain cross head, boning rod, post and sewer invent. Give the steps how the setting out work will be carried out for fixing the invert of a sewer in downslope. 8



For an excavation pit marked by the above figure the depths of excavations for the various points are as below :

Port	P	Q	R	S	T	U	V
Excavation depth (m)	3.20	2.85	2.68	2.75	2.92	3.44	3.68

Calculate the volume of earthwork.

5 (a) Illustrate drawing sketches how the tangent lengths will be marked if the point of intersection of the tangents is inaccessible so as to set the simple circular curve. 8

OR

(a) Explain the tacheometric method for setting out simple circular curve.

(b) In constructing a reservoir an excavation pit with dimensions at bottom as 16 m × 12 m and height equal to 5 metres is to be made. If the sides of the excavation have slope of 2 horizontal to 1 vertical calculate the volume of earthwork. Assume that the ground surface is level before excavation. 7

6 (a) Explain prismoidal correction. Obtain an expression for simple case of level section is terms of the side slope s:1, formation width b, h and H heights of centre and the sections are distance 'd' apart. 7

(b) Draw sketches to explain setting out of culverts. 6

OR

(b) Draw sketches and explain how setting out of building will be done by making use of rectangle formed by centre lines of the outer wall of a building. 6

(c) Calculate the first three perpendicular offsets from long chord at an interval of 20 metres to set out a simple circular curve of 280 metre radius and deflection angle 60°. 7