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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)

नीचे दृशविवेक निशानीवाणी विगतो उत्तरवही पर अवश्य कर्णवी.
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

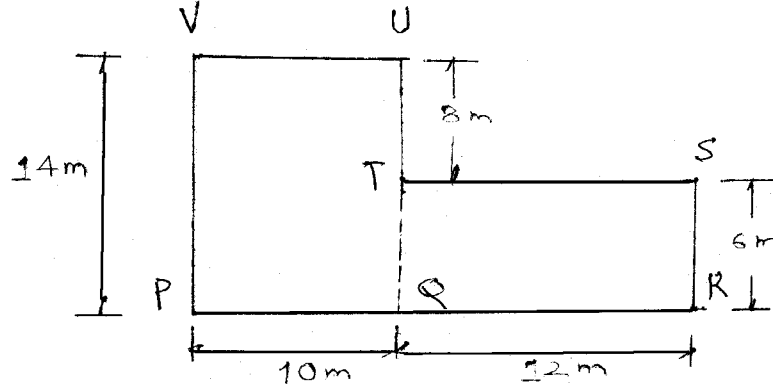
Line	Length (m)	Bearing
AB	75.50	30° 24'
BC	180.50	110° 36'
CD	60.25	210° 30'
DA	(?)	(?)

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 invert. 8
Give the steps how the setting out work will be carried out for fixing the invert of a sewer in downslope.



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. 7
- (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 in 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