

SURVEYING - II

Time: Three hours

Full Marks 100
(50 marks for each part)

Use a separate Answer-Script for each part

Part-IQuestion no. 1 is compulsory
Answer any two from the rest
(Assume any data, if required, reasonably)1. Write short notes on the following (any four): (4×5) = 20I. Prove ' $D = k.S + C$ ' (with usual notations) in fixed hair stadia method of tacheometry

II. Bowditch method of closing error adjustment of a traverse

III. Relations between the fundamental axes to be a proper condition theodolite

IV. Temporary adjustment in theodolite survey

V. Least count of a theodolite

VI. Chromatic aberration in a theodolite telescope

VII. Different methods of tacheometric survey

VIII. Elimination of the effect of eccentricity in upper and lower plate in the measurement of horizontal angle with a theodolite

2.

Below are the particulars of part of a traverse survey:

Line	Lengths in m	Bearing
AB	175	20°
BC	370	130°
CD	488	210°

Find the distance between a point 'P' on AB, 100 m from 'A' and a point 'R' on CD, 230 m from 'C'. Also compute the bearing of line PR.

3.

A tacheometer was fitted with an anallactic lens used to observe the following:

From	To	Bearing	Vertical angle	Hair readings
C	A	320°	+ 12°	0.906, 1.721, 2.536
C	B	50°	+ 10°	0.744, 2.199, 3.654

The value of the constant was 100 and the staff was held vertically. Determine the length and gradient of AB.

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4.

It is impossible to observe the length and bearing of a line AB directly and the following are the observations made from two stations C and D.

Line	Lengths in m	Bearing
CA	129.0	S 68° 20' W
CD	294.0	N 29° 40' E
DB	108.0	N 60° 20' W

Compute the length and bearing of AB, and also the angles CAB and DBA.

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B.E. CIVIL ENGINEERING 2nd YEAR 2nd SEMESTER EXAMINATION, 2018 (OLD)
 (1st / 2nd Semester / Repeat / Supplementary / Annual / Biannual)

SUBJECT: SURVEYING-II

(Name in full)

Time: ~~Two hours~~/~~Three hours~~/~~Four hours~~/~~Six hours~~

Full Marks: 100

(50 marks for each part)

Use a separate Answer-Script for each part

Question No.	Part-II	Marks
	Answer Question-1 and 2 and any <i>Two</i> questions from the rest	
Q.1) A)	<p>Fill in the blanks with appropriate word(s):</p> <p>i. The distance between the apex and midpoint of the long chord of a simple curve is called</p> <p>ii. The angle between the original tangent and the tangent common to both transition and circular curve is called</p> <p>iii. Valley curve is one type of curve.</p> <p>iv. Gurley's Current Meter is used for measurement of of any water body.</p> <p>v. Rate of change in radial acceleration is expressed in Unit.</p> <p>vi. The sounding stations are located by for deep seas.</p>	1*6=6
B)	<p>State whether the under-mentioned statements are True or False with necessary justifications:</p> <p>a) Reverse curve is not suited for meandering path of hilly areas.</p> <p>b) Direct line method is recommended for locating the sounding stations when they are scattered over the water body.</p> <p>c) Weisbach triangle method is followed for transference of levels in the tunnel.</p>	2*3=6
Q.2)	<p>a) Deduce the necessary expression for rear tangent length (T_r) of a reverse curve comprising two simple circular arcs bending in opposite direction.</p> <p>b) Describe "Two Theodolite Method" of locating sounding stations with pertinent expressions.</p> <p>c) Deduce the necessary expression for computing elevation of a vertical control point on the earth surface with respect to the known elevation of another control station by the method of "Reciprocal Levelling".</p>	7 5 6

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(50 marks for each part)

No. of Question	Part-II	Marks
Q.3)	The chainage of the point of intersection of two straights is 951.65m with an angle of intersection of 25°47'. The straights are to be connected by a simple circular curve having radius of 208m. Set out the simple curve by 'Tangential angle method' using a 20" theodolite.	10
Q.4)	An observer taking soundings from a boat (O) wished to locate his position and measured with a sextant the angles subtended at (O) by three points A, B and C on the shore. The length AB and BC were scaled from the map and found to be 219m and 239m respectively and the angle $\angle ABC$ was 139°38'. The observed angles $\angle AOB$ and $\angle BOC$ were 36°42' and 42°54' respectively. What are the distances of (O) from A, B and C?	10
Q.5)	a) Describe the "Simm's Method" of transferring the surface centerline underground with the help of pertinent sketch.	5
	b) A vertical shaft was excavated and two plumb wires (A & B) were suspended into it at a distance of 3.863m. A theodolite was set up at C, within the tunnel, slightly off the line AB at a distance of 6.69m from the wire B. The angle ACB was found to be 2'20". Calculate the co-ordinates of the point C with respect to the line AB, produced.	5