Form A: Paper –Setting Blank

Ref No.: Ex/CE/5/T/202/2018(Old)

B.E. (CIVIL ENGG.) (PART TIME) 2nd YEAR 1st 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-I	Marks
	Answer Question-1 and 2 and any *Two* questions from the rest	
Q.1) A)	**Fill in the blanks with appropriate word(s):** a) The distance between the mid-point of the long chord and the apex of a simple curve is called ----------. b) A vertical curve of .....configuration is not usually considered for complicacy of calculation. c) The angle between the original tangent and the tangent common to both transition and circular curve is called ..... d) The sounding stations are located by ..... for deep seas. e) The maximum superelevation recommended under normal condition for narrow gauge railway track is ..... mm. f) In tunnel survey short vertical depths are measured by	**1*6=6**
B)	**State whether the under-mentioned statements are True or False with necessary justifications:** a) Reverse curve is not suited for meandering path of hilly areas. b) Direct line method is recommended for locating the sounding stations when they are scattered over the water body. c) Weisbach triangle method is followed for transference of levels in the tunnel.	**2*3=6**
Q.2)	a) Establish the fundamental expression for computing the deflection angle for **nth peg** on a simple circular curve required for **"Double Theodolite Method"** of setting out of simple curve.	7

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B.E. (CIVIL ENGG.) (PART TIME) 2nd YEAR 1st SEMESTER EXAMINATION, 2018 (O

(1st / ~~2nd~~ Semester / ~~Repeat~~ / ~~Supplementary~~ / ~~Annual~~ / ~~Biannual~~)

SUBJECT: SURVEYING-II

(Name in full)

Full Marks

Time: ~~Two hours~~/Three hours/~~Four hours~~/ ~~Six hours~~ (50 marks for each

Use a separate Answer-Script for each part

No. of Question	Part-I	Ma
	b) Deduce the necessary expression for **forward tangent length (T_r)** of a reverse curve comprising two simple circular arc bending in opposite direction? c) What are the conditions to be satisfied by a transition curve when inserted at both ends of a circular curve?	
Q.3)	The chainage of the point of intersection of two straights is **976.35m** with an angle of intersection of **22°57′**. The straights are to be connected by a simple circular curve having radius of **204m.** Set out the simple curve by **'Tangential angle method'** using a **20″** theodolite.	
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 **221m** and **254m** respectively and the angle ∟**ABC** was **117°47′**. The observed angles ∟**AOB** and ∟**BOC** were **37°28′** and **40°35′** respectively. What are the distances of **(O)** from **A, B** and **C**?	
Q.5)	a) Describe the **"Simm's Method"** of transferring the surface centerline underground with the help of pertinent sketch. b) A vertical shaft was excavated and two plumb wires **(A & B)** were suspended into it at a distance of **3.497m.** A theodolite was set up at **C**, within the tunnel, slightly off the line **AB** at a distance of **6.92m** 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.	

Ref No. – **EX/CE/5/T/202/2018(OLD)**

B.CIVIL ENGG. (PART TIME) 2nd YEAR 1st SEM. EXAM. 2018 (OLD)

SURVEYING - II

Time: Three hours | Full Marks 100 (50 marks for each part)

Use a separate Answer-Script for each part

Part-II

Question no. **1** is compulsory

Answer any **two** from the rest

(Assume any data, if required, reasonably)

Write short notes on the following (any four): (4×5) = 20

I. Requirement of crown glass and flint glass in the object lens of a theodolite telescope

II. What are the different types of axes in a theodolite

III. Least count of a theodolite with direct verniers

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

V. Spire test

VI. Significance of shift plate in a theodolite

VII. Advantages of reiteration method of angle measurement in theodolite survey

VIII. The subtense bar method of tacheometry

Find the Hoz. length and gradient from A to B using the data given in the table.

Instrument at	Staff at	line	Bearing	Vertical angle	Cross hair readings
P	A	PA	85^0	$-3^0\,30'$	1.35, 2.10, 2.85
P	B	PB	143^0	$2^0\,45'$	1.955, 2.860, 3.765

The staff was held vertical in both cases. The constants of the instruments K=100, C=0.1.

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3. Compute the distance between a point X on PQ, 115.0m from P, and a point Y on RS, 283.0m from R. Also compute the bearing of line YX.

The following notes refer to the part of the above mentioned traverse survey:

Line	Lengths in m	Bearing
PQ	186.0	$31^0\ 40'$
QR	654.0	$135^0\ 20'$
RS	425.0	$221^0\ 40'$

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4. The bearings of PQ and QR are $18^\circ\ 36'$ and $60^\circ\ 24'$, respectively. The coordinates of P and R are as follows (in meters)

Point	Northing	Easting
P	300.0	400.0
R	1432.8	1257.2

Compute the length PQ and QR.

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5. Write short notes on the following (any three):

I. Fast needle method of theodolite traversing

II. Axis method of closing error adjustment of a traverse

III. Sensitiveness of level tube of a theodolite

IV. Measurement of horizontal angle by method of repetition

V. Diaphragm of a theodolite

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