Form A: Paper –Setting Blank

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

B.C.E 2nd YEAR 1st SEMESTER SUPPLEMENTARY EXAMINATION, 2018 (OLD)

(1st / ~~2nd~~ Semester / ~~Repeat~~ / (Evening) 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):** i. The distance between the vertex and the apex of a simple curve is called -------. ii. ..... is called "Ideal Transition Curve". iii. Summit curve is one type of ..... curve. iv. Surface float is required for measurement of ..... of any water body. v. The maximum superelevation recommended under normal condition for broad gauge railway track is ..... mm. vi. 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:** i. Along a transition curve the curvature gradually decreases. ii. **Cross rope method** is recommended for locating the sounding stations when they are scattered over the water body. iii. **"Weisbach Triangle Method"** eliminates the chances of inaccurate bisection while transferring the surface center line underground	2*3=6
Q.2)	a) Establish the fundamental concept behind computing the deflection angle for **n^{th} peg** on a simple circular curve in **"Double Theodolite Method"** of setting out of simple curve. b) Deduce the necessary expression for **forward tangent length (T_f)** of a compound curve comprising two simple circular arcs.	6 6

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SUBJECT: SURVEYING-II

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Full Marks: 100

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No. of Question	Part-I	Marks
	c) Deduce the necessary expression for calculating **shift** of a circular curve.	**6**
Q.3)	Calculate the reduced levels (RLs) of various station pegs on a vertical curve connecting two uniform grades of **(0.74%)** and **(-0.57%)**. The chainage and the reduced level at the point of intersection are **436m** and **303.52m** respectively. Consider the rate of change of grade as **0.1%** per **30m**.	**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 **207m** and **242m** respectively and the angle ∟**ABC** was **127°48′**. The observed angles ∟**AOB** and ∟**BOC** were **31°52′** and **43°37′** respectively. What are the distances of **(O)** from **A, B** and **C**?	**10**
Q.5)	a) 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"**. b) Describe the **"Weisbach Triangle Method"** of transferring the surface centerline underground eliminating the chances of inaccurate bisection.	**(6+4) = 10**

Ref No. – EX/CE/5/T/202/2018(S)(OLD)

B.E (CIVIL ENGG.) 2nd YEAR 1st SEM. SUPPLEMENTARY EXAMINATION 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)

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

I. Closing error and its determination in a theodolite traverse
II. Name different fundamental axes of a theodolite
III. Prove 'D = k.S + C' (with usual notations) in fixed hair stadia method of tacheometry
IV. Temporary adjustment in theodolite survey
V. Least count of a theodolite
VI. Chromatic aberration in a theodolite telescope
VII. Different parts of a telescope of a theodolite
VIII. Spire test in the permanent adjustment of a theodolite

2. Following are the lengths and bearing of traverse ABCDA. The bearings are referred to the magnetic meridian, and the magnetic declination is 5° W. Convert the observed bearings to true bearings and find the error of closure.

Line	Length in m	Bearing
AB	470	345°
BC	635	85°
CD	430	170°
DA	563	265°

3.

A tacheometer is set up at an intermediate point on a traverse course AB and the following observations are taken on a staff held vertically.

Staff stn.	W.C.B.	Vertical angle	Staff intercept 'S' (in m)	Middle hair reading (in m)	Remarks
A	40^0	-05^0	2.172	1.962	R.L. of A = 150 m
B	220^0	$+05^0$	1.986	1.866	

The tacheometer is fitted with an anallactic lens, and the multiplying constant is100. Calculate the length of AB and the reduced level of B.

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4.

Following are the lengths and bearings of the sides of a closed traverse ABCDEA. The lengths of BC and CD could not be measured. Compute the lengths of BC and CD.

Line	Length in m	Bearing
AB	217	S 59° 45' E
BC	?	N 62° 30' E
CD	?	N 37° 35' W
DE	283	S 55° 20' W
EA	173	S 02° 40' W

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