

Enrollment No: \_\_\_\_\_ Exam Seat No: \_\_\_\_\_

# C.U.SHAH UNIVERSITY

## Summer Examination-2018

**Subject Name :** Surveying-II

**Subject Code :** 4TE04SUR1

**Branch :** B.Tech. (Civil)

**Semester :** 4

**Date :** 03/05/2018

**Time :** 10:30 To 01:30

**Marks :** 70

Instructions:

- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

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<b>Q-1</b>	<b>Attempt the following questions:</b>	<b>(14)</b>
a)	Give a list of the permanent adjustments of a transit theodolite.	<b>01</b>
b)	What are the multiplying constant and additive constant of a tacheometer?	<b>01</b>
c)	State principle of tacheometry.	<b>01</b>
d)	What is tangential method of tacheometry?	<b>01</b>
e)	Define normal chord in setting out of simple circular curve.	<b>01</b>
f)	What is rate of change of gradient?	<b>01</b>
g)	What is the difference between a theodolite and tacheometer?	<b>01</b>
h)	Define crab.	<b>01</b>
i)	Define most probable value.	<b>01</b>
j)	What is hydro graphic survey?	<b>01</b>
k)	Enlist five key components of GIS.	<b>01</b>
l)	Define horizon.	<b>01</b>
m)	What is the hour angle?	<b>01</b>
n)	Define the term nadir.	<b>01</b>

**Attempt any four questions from Q-2 to Q-8**

<b>Q-2</b>	<b>Attempt all questions</b>	<b>(14)</b>
(a)	Describe the adjustment of cross-hair ring for the dumpy level.	<b>05</b>
(b)	Discuss the Stadia system (Fixed hair method) of tacheometric measurements.	<b>05</b>
(c)	Explain how the stadia constant K and C are determined by the field measurement method.	<b>04</b>
<b>Q-3</b>	<b>Attempt all questions</b>	<b>(14)</b>
(a)	What is a transition curve? Why and where it is provided?	<b>05</b>
(b)	Define degree of curve. Derive relation between the degree of curve and its radius.	<b>05</b>
(c)	Find the most probable value of the angle from the following observations:	<b>04</b>
	$\angle A = 76^{\circ} 35' 00''$ wt. 1	
	$\angle A = 76^{\circ} 33' 40''$ wt. 2	

**(14)**



- Q.4 (a)** The following observations were made during the testing of a dumpy level: **07**

Instrument at	Staff reading on	
	A	B
A	1.702	2.244
B	2.146	3.044

Distance AB = 150 metres.

Is the instrument in adjustment? To what reading should the line of collimation be adjusted when the instrument was at B? If R.L. of A = 432.052 m, what should be the R.L. of B?

- (b)** Derive the expression for the horizontal and vertical distances in the fixed hair method when the staff is held normal and the measured angle is that of elevation and depression. **07**

**Q-5 Attempt all questions (14)**

- (a)** By tangential method the vertical angles to vanes fixed at 1 m and 3 m above the foot of the staff held vertically at station Q were  $+3^{\circ} 20'$  and  $+6^{\circ} 40'$  respectively from theodolite station P. If the elevation of the instrument axis at station P is 101.520 m. Calculate: (1) the horizontal distance between P and Q; and (2) the elevation of the staff station Q. **07**
- (b)** List different types of EDM instruments and briefly write about each one of them. **07**

**Q-6 Attempt all questions (14)**

- (a)** A circular curve has a 200 m radius and  $65^{\circ}$  deflection angle. what is its degree (i) by arc definition and (ii) by chord definition. also calculate: (a) length of curve, (b) tangent length, (c) length of long chord, (d) apex distance, and (e) mid-ordinate. **07**
- (b)** What is relief displacement? Derive an expression for the relief displacement in a vertical photograph. **07**

**Q-7 Attempt all questions (14)**

- (a)** The scale of an aerial photograph is 1 cm = 100 m and photograph size is 15 cm x 15 cm. Determine the number of photographs required to cover an area of 15 km x 15 km if longitudinal lap is 60% and side lap is 30%. **07**
- (b)** What are the various types of errors in surveying measurements? Give one example of each. Define weight of an observation. **07**

**Q-8 Attempt all questions (14)**

- (a)** List various methods of locating soundings in hydrographic surveying and explain location of soundings from shore in detail. **07**
- (b)** Express the following angles in hours, minutes and seconds: **07**  
 (a)  $50^{\circ} 12' 48''$ , (b)  $8^{\circ} 18' 6''$ , (c)  $258^{\circ} 36' 30''$

