Enrollment No: _____ Exam Seat No: _____

C.U.SHAH UNIVERSITY

Winter Examination-2019

Subject Name: Surveying - II

Subject Code: 4TE04SUR1 **Branch: B.Tech (Civil)**

Semester: 4 **Date: 19/09/2019** **Time: 02:30 To 05:30** **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.

Q-1 **Attempt the following questions** **(14)**

a) What is hydrography? (1)
b) Define true value of a quantity. (1)
c) What is electromagnetic distance measurement (EDM) survey? (1)
d) Define Apparent Solar Time. (1)
e) Draw the neat sketch of simple circular curve showing various elements of it. (1)
f) Define photo principal point. (1)
g) What are the multiplying constant and additive constant of a tacheometer? (1)
h) State principle of tacheometry. (1)
i) What is a transition curve? (1)
j) What is spire test? (1)
k) What is the unit of sounding? (1)
l) Define axis of tilt. (1)
m) Define most probable value. (1)
n) Which angle in PZS astronomical triangle is equal to 90^{o} when star is on prime vertical? (1)

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

Q-2 **Attempt all questions** **(14)**

A) Discuss in detail, Flight planning for aerial photogrammetry. **(7)**
B) Give a list of the permanent adjustments of a transit theodolite and state the object of each of the adjustment. Describe how you would make the trunnion axis perpendicular to the vertical axis. **(7)**

Q-3 **Attempt all questions** **(14)**

A) What are the various types of errors in surveying measurements? Give one example of each. Define weight of an observation. **(7)**
B) Find the most probable values of the angles A, B and C of the triangle ABC from the following observation equations, **(7)**

$A = 62^{o}\ 23'\ 34"$
$B = 54^{o}\ 12'\ 23"$
$C = 63^{o}\ 24'\ 06"$

Q-4 **Attempt all questions** **(14)**

A) Describe the following methods of locating soundings in hydrographic survey: **(7)**
(i) Location by range and one angle from the shore,
(ii) Location by intersecting ranges.

B) Determine the hour angle and declination of a star from the following data: **(7)**
(i) Altitude of the star = 22° 36'
(ii) Azimuth of the star = 42° W
(iii) Latitude of the place of observation = 40° N.

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

A) List the methods for setting out simple circular curve and describe any one in detail. **(7)**

B) Convert following hours into degree, minutes and seconds. **(7)**
(a) $8^h\ 49^m\ 13^s$
(b) $17^h\ 59^m\ 59^s$
(c) $23^h\ 59^m\ 59^s$

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

A) Enumerate different types of EDM instruments and describe briefly the salient features of Total station. **(7)**

B) What is tangential method of tacheometry? Derive the expressions for horizontal and vertical distances by the tangential method when both the angles measured are those of elevation and The staff is held vertically. **(7)**

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

A) Two straights A_1 and B_1 meet at a chainage of 3450 m. A right-handed simple circular curve of 250 m radius joins them. The deflection angle between the two straights is 50^0. Tabulate the necessary data to layout the curve by Rankine's method of deflection angles. Take the chord interval as 20 m. **(7)**

B) List the various tide gauges and explain non-registering tide gauges. **(7)**

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

A) What is relief displacement? Derive an expression for the relief displacement in a vertical photograph. **(7)**

B) The elevation of a point P is to be determined by observations from two adjacent stations of a tacheometric survey. The staff was held vertically upon the point, and the instrument is fitted within an anallatic lens, the constant of the instrument being 100. Compute the elevation of the point P from the following data, taking both the observations as equally trustworthy : **(7)**

Inst. station	Height of axis	Staff point	Vertical angle	Staff readings	Elevation of station
A	1.42	P	+ 2^0 24'	1.230, 2.055, 2.880	77.750 m
B	1.40	P	- 3^0 36’	0.785, 1.800, 2.815	97.135 m

Also, calculate the distance of A and B from P.