Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– IV (Old) EXAMINATION – WINTER 2019

Subject Code: 140601   **Date: 13/12/2019**
Subject Name: Advanced Surveying
Time: 10:30 AM TO 01:00 PM   **Total Marks: 70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1 **(a)** What is tacheometric Surveying? Explain how you would obtain the field constants of **07**
tacheometer by using fixed hair method.

(b) The Following observations were recorded with a tacheometer fitted with Anallatic lens. **07**
Calculate the reduced level of change point at station T. The staff was held vertical during
the observations and the reduced level of B.M. was 500.0 m.

Instrument Station	Hight of Instrument (m)	Staff station	Vertical Angle	Staff readings (m)
O	1.500	B.M.	- 4°30'	1.250,1.400,1.550
O	1.500	C.P.	+ 6°12'	1.550,1.750,1.950
T	1.350	C.P	-7°45'	1.390,1.550,1.710

Q.2 **(a)** Explain tangential methods of surveying and Derive the equations for finding out **07**
horizontal distances and Elevation for one angle of elevation and other of depression.

(b) What is meant by triangulation? Explain the classification of triangulation system. **07**

OR

(b) Two triangulation stations A and B are 60 kilometres apart and have elevations 240 m and **07**
280 m respectively. Find the minimum height of signal required at B so that the line of
sight may not pass near the ground than 2 metres. The intervening ground may be assumed
to have a uniform elevation of 200 metres.

Q.3 **(a)** Write a short note on **07**
1) Station mark   2) Opaque Signals

(b) Following readings of levels were carried out 2.315, 2.325, 2.305, 2.315, 2.300, 2,350, **07**
2.345, 2.335.
Calculate: (1) Probable error for single observation, (2) Probable error of mean.

OR

Q.3 **(a)** What is Azimuth? Explain various methods for determination of Azimuth of a survey line. **07**
(b) What is the weight of a quantity? Discuss various laws of weights. **07**

Q.4 **(a)** Define the following terms (Attempt any Seven) **07**
1. Exposure Station   2. Principal Point   3. Photomap   4. Mosaic
5. Flight Line   6. Isocenter   7. Swing   8. Low oblique photograph

(b) Derive expression for distortion due to ground relief in vertical aerial photograph. **07**
A vertical photograph was taken at an altitude of 1200 m, above MSL. Determine the scale
of the photograph for terrain lying at elevations of 80 m & 300 m, if the focal length of the
camera is 15 cm.

OR

Q.4 **(a)** What is Total Station? Explain various key features of it. **07**
(b) What is remote Sensing? Describe energy interaction with atmosphere and earth surface. **07**

Q.5 **(a)** What is GIS? What are the various key components of geographical information system? **07**
(b) What is the principle of E.D.M? Discuss electromagnetic wave & electromagnetic **07**
spectrum.

OR

Q.5 **(a)** What do you mean by spatial and non-spatial data used in GIS. Also describe the **07**
application of geographical information system.
(b) What is Global Positioning System? Explain how it works. **07**

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