Seat No.: _____   Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER–IV (OLD) EXAMINATION – SUMMER 2022

Subject Code:140601   **Date:02-07-2022**
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.**
4. **Simple and non-programmable scientific calculators are allowed.**

Q.1 **(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) The Following observations were recorded with a tacheometer fitted with anallatic **07** lens. Calculate the distance between B.M and station P, also calculate reduced level of change point at station P. The staff was held vertical during the observations and the reduced level of B.M. was 500.0 m.

Instrument Station	Height 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
P	1.350	C.P	+7°45'	1.390,1.550,1.710

Q.2 **(a)** What is meant by triangulation? Explain the classification of triangulation system. **07**
(b) How the station is marked? Explain various types of signals used in geodetic **07** surveying.

OR

(b) Two triangulation stations A and B are 60 kilometres apart and have elevations 225 m **07** and 310 m respectively. Find the minimum height of signal required at B so that the line of sight may not pass near the ground than 3 metres. The intervening ground may be assumed to have a uniform elevation of 200 metres.

Q.3 **(a)** What is total station? State field application of Total Station. **07**
(b) Define the following terms **07**
1.Conditioned Quantity   2.True Error   3.Weight   of   quantity
4.Mistakes
5.Most Probable error   6.Residual Error   7.Observed Value of a quantity

OR

Q.3 **(a)** Explain the working of a Tellurometer. **07**
(b) What are normal equations? Explain the method of forming normal equations. **07**

Q.4 **(a)** What is relief displacement? Derive the equation. **07**
(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 Probable error for single observation & Probable error of mean.

OR

Q.4 **(a)** What is photogrammetry? With the help of neat sketch explain aerial camera used in **07** photogrammetry.

(b) Determine scale of photograph for terrain laying at elevation of 60m and 210m. If **07** vertical photograph was taken at an altitude of 1400 m. Take focal length of camera of 20 cm.

Q.5 **(a)** What is G.I.S? Write functions of G.I.S. What are the key components of G.I.S? **07**

(b) Explain the various applications with suitable examples of Remote sensing and GPS. **07**

OR

Q.5 **(a)** Explain integration of Remote sensing and G.I.S. **07**

(b) Write a short note on an idealized remote sensing system. **07**

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