

# GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER-IV (NEW) EXAMINATION – WINTER 2020

**Subject Code:3140601**

**Date:09/02/2021**

**Subject Name:Surveying**

**Time:02:30 PM TO 04:30 PM**

**Total Marks:56**

**Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

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|------------|---|-----------|
| <b>Q.1</b> | (a) Define Plane table surveying with its advantages and disadvantages.   | <b>03</b> |
|            | (b) What is principle of plane tabling? State sources of errors during plane tabling.   | <b>04</b> |
|            | (c) What is use of planimeter? When will you apply zero circle? How do you find the zero circle?  | <b>07</b> |
| <b>Q.2</b> | (a) What is least count? How will you find least count of an instrument?  | <b>03</b> |
|            | (b) Which are the methods of measuring horizontal angles? Briefly describe repetition method.   | <b>04</b> |
|            | (c) Explain the temporary adjustments of theodolite.  | <b>07</b> |
| <b>Q.3</b> | (a) Define the term probable value and probable error.  | <b>03</b> |
|            | (b) Discuss the method of achieving horizontal and vertical control in setting out works.   | <b>04</b> |
|            | (c) Enumerate different rules used for calculation of area and discuss in detail the Simpson's one third rule.  | <b>07</b> |
| <b>Q.4</b> | (a) Differentiate between plane surveying and geodetic surveying.   | <b>03</b> |
|            | (b) What do you mean by strength of figure in triangulation work?   | <b>04</b> |
|            | (c) Find out minimum height of signal required at B so that the line of sight may not pass near the ground than 1.5 m if A and B two stations are 50 km apart and have elevations 250 m and 230 m respectively. Ground may be assumed to have uniform level of 200 m. | <b>07</b> |
| <b>Q.5</b> | (a) Explain principle of tachometry.  | <b>03</b> |
|            | (b) What is tacheometer? Explain the procedure of finding its coefficient in the field.   | <b>04</b> |
|            | (c) Derive the expression for horizontal and vertical distances by the fixed hair method when the staff is held vertically & the measured angle is that of elevation.   | <b>07</b> |
| <b>Q.6</b> | (a) What is transition curve? State the requirements of a transition curve.   | <b>03</b> |
|            | (b) Derive the equation for degree of curve on the basis of (i) Arc definition (ii) Chord definition.   | <b>04</b> |
|            | (c) Draw the sketch explaining elements of simple circular curve. Define: Point of intersection, angle of deflection, point of curvature, tangent distance, long chord, mid ordinate, external distance.  | <b>07</b> |
| <b>Q.7</b> | (a) Explain Electromagnetic spectrum.   | <b>03</b> |
|            | (b) Explain working principle of GPS.   | <b>04</b> |
|            | (c) What is GPS? Give its uses and application.   | <b>07</b> |

Q.8

- (a) Explain basic Principle of EDM.
- (b) What is GIS? Discuss component of GIS.
- (c) What is total station? Describe uses of total station in field of civil engineering.

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03

04

07

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