

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER– III (New) EXAMINATION – WINTER 2019****Subject Code: 2130601****Date: 28/11/2019****Subject Name: Surveying****Time: 02:30 PM TO 05:00 PM****Total Marks: 70****Instructions:**

1. Attempt all questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

MARKS

- Q.1**
- (a) Define the following terms: (i) Line of collimation, (ii) Departure, (iii) Latitude **03**
- (b) Draw a neat sketch of Transit vernier Theodolite showing its components. **04**
- (c) What is use of planimeter? When will you apply zero circle? How do you find the zero circle? **07**

- Q.2**
- (a) Define: Area **03**
Convert: (i) 1 Hectare = _____ m². (ii) 1 Acres = _____ ft².
- (b) Discuss the method of achieving horizontal and vertical control in setting out works. **04**
- (c) The following offsets were taken from a chain line to an irregular boundary line at an interval of 5m. **07**
1.20, 2.40, 3.60, 4.70, 3.10, 0.50, 1.00 m.
Compute the area by Simpson's rule and Trapezoidal rule.

OR

- (c) Find the capacity of a reservoir from the contour data given in below table. The scale of plan is 1:4000. Compute with both the methods. **07**

Contour	Area (cm ²)	Contour	Area (cm ²)
260	400	248	205
258	367.5	246	177.5
256	327.5	244	147.5
254	310	242	115
252	277.5	240	0
250	243.75		

- Q.3**
- (a) Define: (i) Deflection angle, (ii) Vertex, (iii) Point of tangency **03**
- (b) Enlist types of curves. Describe the method of setting out a circular curve by any method. **04**
- (c) How will you determine RL of an object when instrument axis of one station nearer to the object is at higher level than the other instrument station? **07**

OR

- Q.3**
- (a) Give following designation of a curve: (i) Tangent length, (ii) Length of the long chord, (iii) Length of curve. **03**
- (b) What is the field procedure of the long chord method in setting a curve. **04**

- (c) Apply method of offset for a railway alignment of a circular nature having radius of 800m and a deflection angle of 36° . Tabulate the ordinates from the long chord at 20m interval. **07**

- Q.4** (a) Briefly give reasons of errors in plan table survey. **03**
 (b) Derive the following relationship: $\delta = 1718.9 \times (C/R)$ minutes. **04**
 (c) An instrument was set up at a point 250m away from a high mast tower. Angle of elevation to the top of tower was 30° , and to the bottom was 3° . Calculate height of the Tower. **07**

OR

- Q.4** (a) Define Plane table surveying with its advantages and disadvantages. **03**
 (b) Explain the three-point problem and different methods of solving it. **04**
 (c) How will you perform direct leveling on steep ground? **07**

- Q.5** (a) What is closing error? How will you find it? **03**
 (b) What do you mean by Soundings in hydrographic survey? Where it is required? **04**
 (c) Enlist methods of theodolite traversing and explain any one of them in detail. **07**

OR

- Q.5** (a) What is least count? How will you find least count of an instrument? **03**
 (b) Why and how Gale's Traverse table is widely used in traverse computation? **04**
 (c) The following are the lengths and bearings of the lines of a closed traverse. Find closing error and its direction. **07**

Line	Length (m)	Bearing
AB	235.10	N $21^\circ 40'$ W
BC	317.40	N $82^\circ 22'$ E
CD	215.00	S $13^\circ 00'$ E
DA	281.60	S $79^\circ 40'$ W
