

Code: CE3T5

**II B.Tech - I Semester–Regular/Supplementary Examinations  
November 2019**

**SURVEYING  
(CIVIL ENGINEERING)**

Duration: 3 hours

Max. Marks: 70

**PART – A**

Answer *all* the questions. All questions carry equal marks  
11x 2 = 22 M

1.

- a) State two primary divisions of surveying.
- b) What are the temporary adjustments in plane table?
- c) Define local attraction. Factors affecting Local Attraction.
- d) What is the principle of leveling?
- e) Write the different formulae to calculate the area of the irregular shaped plot.
- f) List out various Methods of Traversing.
- g) What is Tacheometry? What are the methods used in Tacheometric Surveying?
- h) List out the permanent adjustments of Theodolite.
- i) Explain the Bowditch's rule in balancing the traverse.
- j) Explain briefly about Geodetic Surveying.
- k) Differentiate Spatial Data and Non-Spatial Data.

## PART – B

Answer any **THREE** questions. All questions carry equal marks.

3 x 16 = 48 M

2. a)

- i) Discuss about the different sources of error in chain surveying.
- ii) Distinguish between cumulative and compensating errors of tape.

8 M

b) On a closed compass traverse survey PQRST, following are the observation made with a suspicion of local attraction.

Line	Fore Bearing	Back Bearing
PQ	147° 30'	26° 45'
QR	74° 30'	253° 00'
RS	41° 30'	222° 45'
ST	312° 15'	132° 45'
TP	219° 15'	39° 15'

Identify the station affected with local attraction, included angles and the corrected bearings.

8 M

3. a) Explain characteristics of contours with neat sketch. 8 M

b) Following are the successive staff readings taken in a levelling continuously on sloping ground at common interval of 25 m. The instrument shifted at fifth & ninth location are 0.605, 1.235, 1.860, 2.575, 0.735, 1.430, 1.955,

2.875, 0.875, 1.825, 2.720. Reduced level of the first point is 160.00 m. Rule out a level book page and enters the above readings. Calculate the reduced levels of the points and also the gradient of the line joining the first point and last point.

8 M

4. a) Derive the expression to compute the area by Simpson's rule.

8 M

b) The following perpendicular offsets were taken from a chain line to a hedge:

Chainage (m): 0    15    30    45    60    70    80    100    120  
 Offsets (m) : 7.6   8.5   10.7   12.8   10.6   9.5   8.3   7.9   6.4

Plan the area between the survey line, the hedge line and the end offsets by (i) Trapezoidal rule (ii) Simpson's rule.

8 M

5. a) Explain method of Repetition to measure Horizontal Angle using Theodolite.

8 M

b) A tachometer is setup at an intermediate point on a traverse course PQ and the following observations are made on a staff held vertical.

Staff Station	Vertical Angle	Staff Intercept	Axial Hair Readings
P	+ 9°30'	2.250	2.105
Q	+ 6°00'	2.055	1.975

The constants are 100 and 0. Compute the length PQ and the reduced level of Q. RL of P = 350.50 m. 8 M

6. a) A circular curve has 300 m radius and  $60^\circ$  deflection angle. What is its degree by arc definition and chord definition of standard length 30 m? Also calculate (i) length of curve, (ii) tangent length, (iii) length of long chord, (iv) mid-ordinate and (v) apex distance. 8 M

b) What is a Total station? Explain the working principle of Total Station. 8 M