

S<sub>3</sub>-CE

Arathi. paramaswarani  
Lecturer in CE

TED (10)–3022

Reg. No. ....

(REVISION—2010)

Signature .....

THIRD SEMESTER DIPLOMA EXAMINATION IN ENGINEERING/  
TECHNOLOGY—OCTOBER, 2011

SURVEYING—II

(Common for CE, AR, QS, EN and WR)

[Time : 3 hours

(Maximum marks : 100)

PART—A

Marks

I Answer the following questions in one or two sentences. Each question carries 2 marks.

1. Define deflection angle.
2. State the necessity of taking face left and face right observation.
3. What is a tacheometer ?
4. Write the relationship between the radius and degree of a curve based on fixed length of an arc.
5. Define photogrammetry. (5×2=10)

PART—B

II Answer any five of the following. Each question carries 6 marks

1. Give a list of temporary and permanent adjustments of a transit theodolite.
2. Explain the procedure for traversing by the method of deflection angles.
3. What do you understand by omitted measurements? What are the various cases?
4. An instrument was set-up at A, and the angle of depression to a vane 2 m above the foot of the staff held at B was  $6^{\circ}26'$ . The horizontal distance between A and B was 150 m. Determine the R.L. of the staff station B, given the R.L. of the instrument axis was 95.217 m.
5. Distinguish between stadia tacheometry and tangential tacheometry.
6. What is a transition curve? What are the requirements of transition curve?
7. Explain distomat. (5×6=30)

## PART—C

(Answer *one* full question from each unit. Each question carries 15 marks.)

## UNIT—I

- III (a) You have to measure four horizontal angles from an instrument station P. What method you will prefer to measure the angle? Explain the procedure. 7
- (b) In a transit theodolite the horizontal axis is not perpendicular to the vertical axis. Explain how we could adjust the same. 8

OR

- IV (a) List the component parts of transit theodolite. 5
- (b) You have to extend a straight survey line to a point which is far away from it. How can you do it when the theodolite is in perfect adjustment. 6
- (c) Differentiate between line of collimation and the axis of telescope of a theodolite. 4

## UNIT—II

- V (a) Explain back bearing method of observing bearings of the sides of a traverse directly in the field using theodolite. 7
- (b) The latitude and departures of the survey lines of a traverse PQRS are given as follows :

<i>Line</i>	<i>Latitude</i>	<i>Departure</i>
PQ	+ 204.6	+ 113.9
QR	- 234.9	+ 205.8
RS	- 150.7	- 86.0
SP	+ 181.0	- 233.7

Calculate the area of the traverse. 8

OR

- VI (a) Explain Gale's traverse table : 8
- (b) The following lengths and bearings were recorded in running a closed traverse JKLMN, the length and bearing of side NJ having been omitted. Calculate the length and bearing of side NJ :

<i>Line</i>	<i>Length in m</i>	<i>Bearing</i>
JK	217.5	120°15'
KL	318.0	62°30'
LM	375.0	322°24'
MN	283.5	335°18'
NJ	—	—

## UNIT—III

VII (a) Derive an expression for horizontal and vertical distances by tangential method when :

(i) Both the angles are angles of elevation. 5

(ii) One angle is of elevation and the other is angle of depression. 5

(b) How the constants of tacheometer can be determined in the field? 5

OR

VIII (a) A stadia tacheometer is sighted on a staff held vertically upon a point A. The telescope is transmitted and a point marked in the line of sight and readings are taken on a staff held vertically at that point. If the multiplying and additive constants are 100 and 0.3 respectively, compute the horizontal distance from A to B and the difference of level between these points. The observations are as follows :

Staff point	Vertical angle	Staff reading in m
A	$- 7^{\circ}42'$	1.290, 2.000, 2.700
B	$+ 12^{\circ}36'$	1.000, 1.750, 2.500

(b) Write the principle of tacheometry. 10

5

## UNIT—IV

IX (a) Explain how a simple curve can be set out by offset from tangents. 10

(b) Briefly describe about GIS. 5

OR

X (a) Write the required steps for the initial setting of a total station for a field work. 9

(b) Calculate the offsets at 20 m intervals along the tangents to locate a curve having radius of 400 m, the deflection angle being  $60^{\circ}$ . 6