TED (15) – 3012

(REVISION — 2015)

Reg. No. .....

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# DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 2018

## SURVEYING - II

[*Time* : 3 hours

(Maximum marks : 100)

## PART — A

(Maximum marks : 10)

Marks

I Answer *all* questions in one or two sentences. Each question carries 2 marks.

1. Define parallax.
2. What are the total co-ordinates of a point ?
3. Name the principle methods of plotting a traverse survey.
4. What is the function of an anallactic lens in a tacheometer ?
5. What is the basic principle of geodimeter measurement ? (5 × 2 = 10)

## PART — B

(Maximum marks : 30)

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

1. State on the following lines of a theodolite.
   (a) Vertical axis (b) Line of collimation (c) Axis of altitude level tube.
2. What is the reiteration method of measuring a horizontal angle ? Name any four errors eliminated by reiteration method.
3. How the area of a traverse is calculated by independent co-ordinate method ?
4. The following observations were made to determine the RL of the top of a tower at a point A.

| *Instrument at* | *sight to* | *vertical angle* | *Remark* |
|---|---|---|---|
| B | A | +25°30' | Staff reading on BM =1.250 |
| C | A | +16°20' | Staff reading on BM = 1.150 |

RL of BM = 152.260, BC = 30M. Find RL of A.

Marks

5. The distance of 50 m and 300 m were accurately measured out and the intercepts on the staff between the outer stadia hairs were 0.49 at the former and 3.00 at the later. Find out the tacheometric constants.

6. Obtain a relation between Radius and Degree of a curve based on 30 m length of a chord.

7. What are the basic functions involved in an EDM instrument ? $(5 \times 6 = 30)$

## PART — C

(Maximum marks : 60)

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

### UNIT — I

III (a) Define the following with respect to a theodolite.

(i) Swinging (ii) Transiting

(iii) Face change (iv) Least count 8

(b) Explain the determination of bearing of a line with a theodolite. 7

OR

IV (a) Explain the following parts of a theodolite briefly.

(i) Spindles of Axis (ii) Upper and lower plates

(iii) Vertical circle (iv) Index frame 8

(b) What is repetition method and what are the errors eliminated by this method ? 7

### UNIT — II

V (a) The following are the lengths and bearings of the sides of a closed traverse ABCD.

| *Line* | *Length in m* | *Bearing* |
|---|---|---|
| AB | 70.80 | 140°20' |
| BC | 195.50 | 35°40' |
| CD | 35.40 | 330°40' |

Compute the length and bearing of the line DA. 8

(b) How to solve a traverse when length of one side and bearing of adjacent side is omitted ? 7

OR

Marks

VI (a) A closed traverse was conducted round obstacle and the following observations were made. Workout the missing quantities.

| *Side* | *Length (m)* | *Azimuth* |
|---|---|---|
| AB | 500 | 98°30' |
| BC | 620 | 30°20' |
| CD | 468 | 298°30' |
| DE | — | 230°0' |
| EA | — | 150°10' |

10

(b) What are the conditions to be satisfied while a theodolite is in permanent adjustment ? 5

UNIT — III

VII (a) Derive a relation to find the RL of a point "A" at top with its foot inaccessible and the nearest station at a lower level, the instrument used being a theodolite. 10

(b) What are the different systems adopted in tacheometric measurements ? 5

OR

VIII (a) A tacheometer was set up at a station A and the following readings were obtained on a staff held vertical at B.

| *Instrument station* | *staff station* | *Vertical angle* | *Hair readings* | *Remark* |
|---|---|---|---|---|
| A | BM | -5°20' | 1.50, 1.80, 2.450 = 750.50x | RL of BM |
| A | B | +8°12' | 0.750, 1.500, 2.250 | |

Calculate the horizontal distance AB and the RL of B. The constants of the instruments are 100 and 0.15. 9

(b) State any six advantages of tacheometric surveying. 6

UNIT — IV

IX (a) Calculate the ordinates from a 160 m long chord at 10 m interval to set out a simple circular curve of 8°. 9

(b) What is remote sensing ? What are its application in civil engineering field ? 6

OR

X (a) Two straight lines AB and BC intersect at chainage 2080 m. The intersection angle being 140°. Calculate the radius and chainage of the tangent points of the circular curve connecting the two lines if D = 8°. Take the chord length as 30 m. 7

(b) Write in brief, the steps involved in measuring the area of a plot with a single stationed total station. 8