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3012 (3)

N19 - 00145

TED (15) - 3012  
(REVISION - 2015)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — OCTOBER, 2019

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 the term transiting the telescope.
2. What is meant by closing-error ?
3. List the different methods of tachometry.
4. What is length of a curve ?
5. What is an EDM ?

(5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. State the following :  
(a) Right swing      (b) Face left observation      (c) Trunnion axis
2. Write any six uses of a theodolite.
3. Compare consecutive co-ordinate and independent co-ordinates.
4. List the steps involved in Gales traverse table.
5. Derive the fundamental distance formula of stadia tachometry,  $D = kS + C$ .
6. Explain simple and compound curves with neat sketches.
7. What are the applications of remote sensing ?

(5×6 = 30)

PART — C

(Maximum marks : 60)

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

UNIT — I

- III (a) List out the fundamental axes of a transit theodolite and mention their relationship between them if the theodolite is in perfect adjustment. 8
- (b) Explain the steps involved in temporary adjustment of a transit theodolite. 7

OR

- IV (a) Explain measuring horizontal angle by repetition method. 8
- (b) Explain the permanent adjustment of a plate level axis of a theodolite. 7

UNIT — II

- V (a) What is deflection angle and write the procedure for traversing by deflection angle ? 8
- (b) The following table gives the length and bearing of the four lines of a closed theodolite. Theodolite traverse ABCDE. Determine the length and bearing of the fifth line EA.

<i>Line</i>	<i>Length</i>	<i>Bearing</i>	
AB	194.1	85° 30'	
BC	201.1	15° 00'	
CD	165.4	285°30'	
DE	172.6	195°30'	
EA	...	...	7

OR

- VI (a) Define balancing of the traverse. State Bowditch's rule and Transit rule. 7
- (b) The latitude and departures of the lines of a closed traverse are given below. Calculate the area of the traverse.

<i>Line</i>	<i>Northing</i>	<i>Southing</i>	<i>Easting</i>	<i>Westing</i>	
AB		157.2	154.8		
BC	210.5		52.5		
CD	175.4			98.3	
DA		228.7		109.0	8

UNIT — III

- VII (a) Derive an expression for the horizontal distance D of a vertical staff from the tachometer if the line of sight is inclined in stadia tachometry. 7

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Marks

- (b) Determine the distance between the instrument station P and the staff station Q from the following data :

Height of the instrument = 1.490m  
Vertical angle =  $+4^{\circ} 30'$   
Staff reading (vertical) = 0.645 ; 0.998; 1.351m.

Also determine the R.L. of Q if that of P is 200.410m.

Take  $k = 100$  and  $C = 0.0$

8

OR

- VIII (a) Derive the method to find out the R. L. of staff station (Q) of the case when both the angles are of angles of elevation in tangential method of tachometry.

7

- (b) In order to determine the elevation of the top Q of a signal, observations were made from two instrument stations A and B which are in line with the signal. The stations A and B are 80m apart. The vertical angles of Q as observed at A and B were  $30^{\circ} 45'$  and  $16^{\circ} 10'$ . The staff readings on the bench mark of elevation 178.450 m was 2.850m when the instrument was at A, and 3.580m when the instrument was at B. Determine the elevation of the top and foot of the signal, if the height of the signal above the base is 5m.

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UNIT — IV

- IX (a) Two straight lines intersect at chainage 1150.50m, and the angle of deflection is  $60^{\circ}$ . If the radius of the curve is 500 m, determine the following :

- (i) Tangent distance
- (ii) Length of the curve
- (iii) Chainage of point of curvature and tangency
- (iv) Length of long chord
- (v) Degree of curve
- (vi) Apex distance and mid-ordinate.

10

- (b) What are the components of GPS receiver ?

5

OR

- X (a) Determine the ordinates of the points on a circular curve having a long chord of 100 m and a mid ordinate of 5 m. The ordinates are to be measured from the long chord at an interval of 10 m.

10

- (b) What is a Distomat ? List any four models of a Distomat.

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