

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/  
MANAGEMENT/COMMERCIAL PRACTICE — APRIL, 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 terms transiting and swinging the telescope.
2. What is the difference between latitude and departure ?
3. Write the principle of stadia tacheometry.
4. What is a transition curve ?
5. Differentiate between aerial photogrammetry and terrestrial photogrammetry. (5×2 = 10)

PART — B

(Maximum marks : 30)

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

1. What are the errors eliminated by repetition method ?
2. Explain how you would measure the magnetic bearing of a line with a theodolite.
3. Describe Bowditch's method and transit method of balancing the traverse.
4. What do you understand by omitted measurements ? Give a list of its general cases.
5. Distinguish between fixed hair method and movable hair method.
6. The following observations were taken with a transit theodolite.

Instrument Station	Staff Station	Target	Vertical Angle	Staff Reading (m)	Remarks
O	A	Lower	+4°30°	0.950	R. L. of the instrument axis is 255.50 m
		Upper	+6°30°	3.250	

Calculate the horizontal distance between the instrument station and the staff station A and also the reduced level of A.

7. Write the functions of total station. (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) State the fundamental lines and their relations if the theodolite is in perfect adjustment. 8  
 (b) What method you will prefer to measure four horizontal angles from a station O ?  
 Explain the procedure. 7

OR

- IV (a) Define deflection angle. How would you measure deflection angles using a theodolite ? 8  
 (b) List out the temporary and permanent adjustments of a transit theodolite. 7

## UNIT — II

- V (a) The following are the interior angles of a closed traverse ABCDE.  
 A  $87^{\circ}50'20''$  B  $114^{\circ}55'40''$  C  $94^{\circ}38'50''$  D  $129^{\circ}40'40''$  E  $112^{\circ}54'30''$   
 If the observed bearing of AB is  $221^{\circ}18'40''$ , Calculate the bearings of the remaining sides of the traverse. 8  
 (b) What is the difference between closed and open traverses ? What are the checks applied in closed traverse ? 7

OR

- VI (a) What is Gale's traverse table ? How is it prepared ? 8  
 (b) The following are the lengths and bearings of the sides of a closed traverse PQRS.

Line	Length (m)	Bearing
PQ	70.80	$140^{\circ}15'$
QR	195.90	$36^{\circ}25'$
RS	35.20	$338^{\circ}45'$

Compute the length and bearing of the line SP. 7

## UNIT — III

- VII (a) A tacheometer was set up at station C and the following readings were obtained on a staff vertically held. Calculate the horizontal distance CD and reduced level of D, when the constants of the instruments are 100 and 0.15.

Instrument Station	Staff Station	Vertical Angle	Hair Readings			Remarks
C	BM	$-5^{\circ}20'$	1.150	1.800	2.450	RL of BM = 750.50
	D	$+8^{\circ}12'$	0.750	1.500	2.250	

- (b) What is an anallactic lens ? Why is it provided ? Write its advantages and disadvantages. 8

OR

- VIII (a) Derive the distance and elevation formulae in stadia tacheometry for horizontal line of sight. 8
- (b) The following tacheometric observations were made with an anallactic telescope having a multiplying constant 100 on a vertically held staff. 7

Instrument Station	HI	Staff Station	Vertical Angle	Hair Readings			Remarks
A	1.480	BM	-1°54'	1.020	1.720	2.420	RL of BM = 100.00m
A	1.480	P	+2°36'	1.220	1.825	2.430	
Q	1.500	P	+3°6'	0.785	1.610	2.435	

Find the reduced levels of stations A, P and Q.

UNIT — IV

- IX (a) Two straights intersect at chainage 2500m and the angle of intersection is 120°. If the radius of the simple curve to be introduced is 600m, find the following. 8
- Tangent distance
  - Chainage of point of commencement
  - Chainage of point of tangency
  - Length of long chord
- (b) What is remote sensing? Write its applications in civil engineering. 7

OR

- X (a) Enumerate the advantages of GPS over conventional terrestrial surveying. 8
- (b) Write the applications of GIS in civil engineering. 7