TED (15/19) – 3012
(Revision – 2015/19)

N23-6232

Reg.No……………..
Signature…………...

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER – 2023

SURVEYING - II

[Maximum Marks : 100] [Time : 3 hours]

PART – A

(Maximum Marks : 10)

Marks

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

1. Name the instrument used to measure horizontal and vertical angles, mention its least count.
2. List any four components of a theodolite.
3. Differentiate between open and closed traverse.
4. Define tacheometry.
5. List any two purposes of curves in roads. (5x2=10)

PART – B

(Maximum Marks : 30)

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

1. Differentiate between repetition and reiteration methods of measuring horizontal angle.
2. What is meant by traverse balancing? Briefly explain any two methods of traverse balancing.
3. In a closed traverse it was found that algebraic sum of latitudes and departures are 1.39 and -2.17 respectively. Calculate the length and bearing of the closing error.
4. A levelling staff is held vertical at distances of 100m and 300m from the axis of tacheometer and the staff intercept for horizontal sights are 0.99m and 3m respectively. Find the constants of the instrument.
5. Find the height of the tower, if the vertical angles from a theodolite station at 25m distance are 25°30’ to the top, 15°20’ to the foot of the tower.
6. What do you mean by remote sensing? What are its applications in civil engineering field?
7. Obtain the relation between radius and degree of curve based on 20m length of chord.

(5x6=30)

PART – C

(Maximum Marks : 60)

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

UNIT – I

III. (a) Write the procedure to measure deflection angles. (7)

(b) Explain the following

(i) Vertical circle (ii) Index frame (iii) Face change (iv) Horizontal axis (8)

OR

IV. (a) Briefly explain temporary adjustments of a theodolite. (7)

(b) Which are the fundamental lines of a transit theodolite? State their desired relations. (8)

UNIT – II

V. (a) A closed traverse was conducted round an obstacle and the following observations were made. Workout the missing quantities. (8)

Side	Length(m)	azimuth
AB	500	98°30’
BC	620	30°20’
CD	468	298°30’
DE	?	230°00’
EA	?	150°10’

(b) What do you mean by Gale’s traverse table? Briefly explain its preparation. (7)

OR

VI. (a) In a closed traverse PQRS the co-ordinates of the points are as follows. Find the area of traverse (8)

Point	Latitude(m)	Departure(m)
P	0	0
Q	0	-893.8
R	634.8	728.8
S	1068.4	699.3

(b) Briefly explain the method of measurement of bearing by back bearing method. (7)

UNIT –III

VII. (a) The following observations were made to determine the elevation of entry tower of a temple. Find RL of A. (8)

Instrument at	Sight to	Vertical angle	Remarks
B	A	+25°23'	Staff reading on BM=1.350
C	A	+16°40'	Staff reading on BM=1.225, RL of BM=152.260, BC=30m

(b) In order to determine the elevation of Q of a signal on a hill, observations were made from two stations P and R. The stations P, R and Q were on the same plane. If the angles of elevations of the top Q of the signal measured at P and R were 25°35' and 15°05' respectively, determine the elevation of the foot of the signal if the height of the signal above its base was 4m. The staff readings upon the benchmark(RL105.42) were respectively 2.755 and 3.855m when the instrument was at P and at R. The distance between P and R was 120m. (7)

OR

VIII. (a) What do you mean by anallactic lens? Why is it provided? Write its advantages & disadvantages. (7)

(b) A tacheometer was set up at a station P and the following readings were obtained on a staff held vertical at Q. Calculate the horizontal distance PQ & RL of Q. The constants of the instruments are 100 & 0.15. (8)

	Staff Station	Vertical angle	Hair reading	Remark
P	BM	-5°20'	1.5, 1.8, 2.45	RL of BM=750.50
P	Q	+8°12'	0.75, 1.5, 2.25	

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:

(i) Tangent distances (ii) Chainage of the PC (iii) Chainage of the PT

(iv) Length of long chord. (8)

(b) What are the functions of a total station? (7)

OR

X. (a) What do you mean by remote sensing? What are its application in civil engineering field?(6)

(b) Two roads meet at an angle of 127°30'. Calculate the necessary data for setting out a curve of 15chains radius to connect the two straight portions of the road. It is intended to set out the curve by chain and offsets using radial offsets from tangent. Assume the length of chain as 20m. (9)

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