

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/
COMMERCIAL PRACTICE, NOVEMBER-2020**

SURVEYING-II

[Maximum marks: 100]

(Time: 3 Hours)

PART – A

[Maximum marks: 10]

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

- I. (1). List the fundamental lines of a transit theodolite.
(2). Define the term swinging the telescope.
(3). Define independent co ordinate of a point.
(4). List the systems of tacheometric survey.
(5). List the four classifications of curves.

(5 x 2 = 10)

PART – B

[Maximum marks: 30]

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

- II. (1). Explain the temporary adjustments of a transit theodolite.
(2). Compare the latitude and departure of a survey line.
(3). Explain the method of solving omitted measurement if the bearing or length of one side omitted.
(4). Find the reduced level of point 'C' at the top of a post. When the foot of the post (Point B) is accessible from the instrument station A.

Instrument station	Reading on BM	Vertical angle to C	RL of BM	Distance AB
A	1.578	10° 12 minute	543	30m

- (5). Explain the principle of stadia tacheometry.
(6). Explain the method of setting out circular curve by taking offsets from the long chord.
(7). Define remote sensing and list the application of remote sensing in civil engineering.

(5 x 6= 30)

PART – C

[Maximum marks: 60]

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

UNIT –I

- III. (a). Explain the method of measuring the bearing of a line using theodolite and a tubular compass.

(8)

(b). List the errors that are eliminated by method of repetition. (7)

OR

IV. (a). Explain the method of measuring the deflection angle using a theodolite. (8)

(b). Compare the following terms used in theodolite survey.

(i). Transit and non-Transit theodolite.

(ii). Face left and face right observation.

(iii). Telescope normal and telescope inverted. (7)

UNIT-II

V. (a). The lengths and bearings of a closed traverse PQRS are as follows.

Line	Length in 'm'	Reduced Bearing
PQ	255	S 39°18' E
QR	656	N 35° 00' E
RS	120	N 21° 18' W
SP	-	-

Compute the length and bearing of line SP (8)

(b). Illustrate the closing error of a closed traverse. (7)

OR

VI. (a). Compute the independent coordinates of the traverse from the given data, assuming the independent coordinate of station 'A' is (400, 400)

Line	Latitude		Departure	
	Northing	Southing	Easting	Westing
AB	214	-	124	-
BC	-	245	205	-
CD	-	155	-	90
DA	186	-	-	239

(8)

(b). Explain the method of computing the area of a closed traverse by independent coordinate method. (7)

UNIT-III

VII. (a). The top 'Q' of a signal was sighted from two stations 'P' and 'R' at a horizontal distance of 100 m apart, the stations 'P' and 'R' being in line with 'Q'. The angles of elevations of 'Q' at 'P' and 'R' were 28° 42' and 18°06' respectively. The staff readings upon the bench mark of reduced level 287.28 were respectively 2.870 and 3.750 when the instrument was at P and R, the telescope being Horizontal. Compute the elevation of the foot of the signal

if the height of the signal above its base is 3 m. (8)

(b). Explain the procedure of determination of tacheometric constants by taking field measurements. (7)

OR

VIII. (a). Determine the gradient from a point 'A' to a point 'B' from the following observations made with a tacheometer fitted with an anallactic lens. The constants of the instrument was '100' and '0' and staff was held vertically.

station	Staff point	bearing	Vertical angle	Staff readings
P	A	134°	+10°32'	1.36,1.915,2.470
	B	224°	+5°06'	1.065,1.885,2.705

(b). The distance of 50m and 300m were accurately measured out and the intercepts on the staff between the outer stadia webs were 0.49 at the former distance and 2.99 at the later. Compute the constants of tacheometer. (7)

UNIT-IV

IX. (a). Two straights intersects at a chainage of 3000m and the angle of intersection 120°.

If the radius of the simple curve to be introduced is 600m find the following.

- (i). Tangent distances.
- (ii). Chainage of point of curve.
- (iii). Chainage of point of tangency.
- (iv). Length of long chord. (8)

(b). Explain the following terms in Aerial photogrammetry.

- (i). Exposure station.
- (ii). Tilt.
- (iii). Principal point. (7)

OR

X. (a). Two straights of a road intersect at a chainage 2565m having their angle of intersection 115°. Compute the chainage of point of curve, point of tangency and the chainage of midpoint of the curve.

Take degree of curve as 5° and standard chord length as 30m. (8)

(b). Discuss photogrammetry and list the applications of photogrammetry in civil engineering. (7)
