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(Revision-2010)

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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE OCTOBER/NOVEMBER-2019

SURVEYING-II

[Maximum marks: 100]

(Time: 3 Hours)

PART – A

[Maximum marks: 10]

I. (Answer all questions in one or two sentences, Each question carries 2 marks)

- (1). What do the terms telescope normal and telescope inverted mean?
- (2). What are the sign conventions of latitude and departure?
- (3). State the principle of tacheometry.
- (4). What is apex distance of a curve? Express it mathematically.
- (5). Name the types of photogrammetry. (5 x 2 = 10)

PART – B

[Maximum marks: 30]

II. (Answer any *five* of the following questions, Each question carries six marks)

- (1). List the fundamental axes of theodolite and mention their relationship with each other.
- (2). Explain clearly the procedure of measurement of horizontal angle by repetition method.
- (3). Briefly describe any two methods used to check the accuracy of an open traverse.
- (4). Derive an expression for the horizontal and vertical distances by tangential method when both the angles are angle of elevation.
- (5). What are the different methods of curve setting?
- (6). 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 latter. Find out the constants of tacheometer.
- (7). Write any six functions of total station. (5 x 6=30)

PART – C

[Maximum marks: 60]

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

UNIT – I

- III. (a) Write the procedure of measuring the bearing of a line with a theodolite. (7)
- (b) Explain the procedure of measurement of horizontal angle by re-iteration method. (8)

OR

(IV) (a). List the errors that are eliminated by the method of repetition in theodolite survey. (5)

(b). Define the following terms.

(i) Transiting

(ii) Swinging

(iii) Horizontal axis

(iv) Centering (v) Double sighting

(10)

UNIT-II

V. (a) Define a closed traverse. What are the checks employed in a closed traverse. (7)

(b) The following records are obtained in a traverse survey, where the length and bearing of the last line were not recorded. Compute the length and bearing of line DA.

LINE	LENGTH(m)	BEARING
AB	75.50	30 ⁰ 24'
BC	180.50	110 ⁰ 36'
CD	60.25	210 ⁰ 30'
DA	?	?

(8)

OR

VI. (a) Following are the latitudes and departures of lines of a closed theodolite traverse.

Adjust the traverse by applying the transit rule.

LINE	LATITUDE	DEPARTURE
AB	123.35	35.68
BC	93.82	205.86
CD	-177.44	70.11
DA	-39.21	-312.25

(8)

(b) The following are the latitudes and departure of lines of a closed traverse. Compute the area of the traverse by independent co-ordinates method.

LINE	LATITUDE	DEPARTURE
AB	222.5	120.5
BC	-245.0	210.0
CD	-150.5	-110.5
DA	170.0	-220.0

(7)

UNIT-III

- VII. (a) Derive an expression for the horizontal distance D of a vertical staff from the tacheometer, if the line of sight is horizontal in stadia tacheometry. (7)
- (b) Find the reduced level of top of a chimney from the following data.

Instrument station	Reading on B.M.	Vertical angle.	R.L of B.M	Distance in 'm'	Remarks
A	1.578	$10^{\circ} 12'$	543.075	30	A and B in line with top of chimney
B	1.269	$8^{\circ} 20'$			

(8)

OR

- VIII. (a). Following observations were taken with a tacheometer at the station A to a staff at B. The staff was held normal to the line of sight with angle of elevation as $25^{\circ} 30'$. If the staff readings are 1.720, 2.660 and 3.600. Determine the horizontal distance AB. Calculate the elevation of B, if the instrument axis is at R.L of 240.00. Assume multiplying constant as 100 and additive constant as 0.50. (7)
- (b). The following observations were taken with a transit theodolite. Calculate the horizontal distance between instrument station and staff, and also the R.L of staff station A.

Instrument station	Staff station	Target	Vertical angle	Staff reading	Remarks
O	A	Lower	$4^{\circ} 30'$	0.950	R.L of the instrument axis 255.500
		Upper	$6^{\circ} 30'$	3.250	

(8)

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)
- (i) Tangent distance (ii) Chainage of point of commencement
- (iii) Chainage of the point of tangency (iv) Length of long chord.
- (b) List out the application of remote sensing in civil engineering. (7)

OR

- X. (a) A simple curve has a radius of 350m and a long chord of length 150m. Calculate offsets to the curve from the long chord at 15m intervals. (8)
- (b) What are the different applications of G.I.S in civil engineering? (7)

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