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[5459]-106

S.E. (Civil) (I Sem.) EXAMINATION, 2018
SURVEYING
(2015 PATTERN)

Time : Two Hours

Maximum Marks : 50

- N.B. :**— (i) Answer Q. No. 1 or Q. No. 2, Q. No. 3 or Q. No. 4, Q. No. 5 or Q. No. 6, Q. No. 7 or Q. No. 8.
(ii) Neat sketches must be drawn wherever necessary.
(iii) Figures to the right indicate full marks.
(iv) Assume suitable data, if necessary.
(v) Use of electronic pocket calculator is allowed in the examination.
(vi) Use of cell phone is prohibited in the examination hall.

1. (A) Enlist and explain the different errors in Compass Surveying. [6]
(B) The following records refer to an operation involving reciprocal leveling : [6]

Instrument	Staff reading on		Remarks
	At	A	B
A	1.425	2.724	Distance AB = 1150.00 m.
B	1.429	2.504	R.L. of Point A is 200 m

Find the true difference in elevation between A and B. If instrument had a collimation error of 0.003/150 m, find the error due to refraction. [6]

P.T.O.

Or

2. (A) The whole circle bearing of a side AB of an equilateral anti-clockwise triangle is $38^\circ 45'$, then determine the Fore and Back bearings of all the sides of the triangle and tabulate your answer. [6]
- (B) Explain the following with neat sketches : [6]
- (1) Longitudinal Levelling
 - (2) Axis of Level Tube
 - (3) Contour Interval
3. (A) Explain the following technical terms : [6]
- (1) Face Left
 - (2) Swinging Right
 - (3) Departure
- (B) The following observations were made on vertically held staff with a Tachometer fitted with an analytic lens. Find the level difference between P and Q. [6]

Instrument Station	Staff station	Vertical angle	Hair readings (m)	Remarks
O	P	$-5^\circ 00'$	0.850, 1.30, 1.50	R.L. of point P is 200 m
	Q	$+10^\circ 00'$	0.70, 0.95, 1.15	

Or

4. (A) Explain the following technical terms : [6]
- (1) Plunging of Telescope
 - (2) Optical Plumet
 - (3) Multiplying constant
- (B) What is closing error ? The following are the length and bearings of the sides of a traverse ABCD. Compute the closing error and direction of closing error. [6]

Line	Length (m)	Bearing
AB	156.5	78° 40'
BC	178.2	152° 32'
CD	234.8	251° 18'
DA	202.6	356° 15'

5. (A) Define Curve. Explain various elements of curves. [7]
- (B) Two straights AB and BC intersect at a chainage of 1326.78 m. The angle of Intersection is 150°. It is required to set out a simple circular curve of 400 m radius to connect the straights. Calculate all data necessary to set out the curve by the method of offsets from the chord produced with an interval of 20 M. [6]

Or

6. (A) Classify different types of curves. Explain the method of setting out curve by Rankin's method (Two Theodolite method). [7]

- (B) Two straights AB and BC intersect at a chainage of 1804.25 m. The angle of deflection is 40° . It is required to set out a simple circular curve of 300 m radius to connect the straights. Calculate all data necessary to set out the curve by the Rankin's method with a peg interval of 20 M. [6]

7. (A) Explain the significance of horizontal and vertical control in building construction. [7]
(B) Explain shortly the GALILEO as positioning system with any *four* points. [6]

Or

8. (A) Describe the fieldwork in tunnel surveying with at least four points and a sketch. [7]
(B) Explain at least *four* salient features of GLONASS. [6]