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[5668]-105

S.E. (Civil) (I Sem.) EXAMINATION, 2019

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 and Q. No. 7 or Q. No. 8.

(ii) Neat diagrams 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.

(vi) Use of cell phone is prohibited in examination hall.

1. (a) Draw sectional view of prismatic compass and explain use of any *four* components. [6]

(b) The following notes refer to an operation involving reciprocal levelling : [6]

Instrument Station	Staff readings on		Remark
	A	B	
A	1.155	2.595	Distance AB = 500 m
B	0.985	2.415	RL of A = 525.500 m

P.T.O.

Find :

- (i) True R.L. of point B.
- (ii) The combined correction for curvature and refraction.
- (iii) The collimation error.
- (iv) Is line of collimation inclined upward or downward ?

Or

2. (a) What is permanent adjustment ? Describe two peg method of adjustment along with neat sketch. [6]
- (b) The following are the observed bearing of the lines of a traverse ABCDEA with a compass in a place where local attraction was suspected : [6]

Line	Fore Bearing	Back Bearing
AB	191° 45'	13° 0'
BC	39° 30'	222° 30'
CD	22° 15'	200° 30'
DE	242° 45'	62° 45'
EA	330° 15'	147° 45'

Find correct bearing of lines.

3. (a) The following records are obtained in a theodolite traverse survey where length and bearing of last side were not recorded. [6]

Line	Length (m)	Bearing
AB	75.50	30° 24'
BC	180.50	110° 36'
CD	60.25	210° 30'
DA	?	?

Calculate length and bearing of line DA.

- (b) Describe method of determining the constants of a tacheometer from field measurements. [6]

Or

4. (a) What are the possible sources of error while using theodolite ? Explain in detail. [6]
- (b) The following observations were made using a tacheometer fitted with an anallatic lens, Staff held vertically and multiplying constant being 100. [6]

Instr ⁿ . Station	Instr ⁿ . Height	Staff Station	Vertical Angle	Hair Reading	Remark
P	1.450	BM	-6° 12'	0.980, 1.540, 2.100	RL of B.M. =
P	1.450	Q	+7° 5'	0.830, 1.360, 1.890	384.25 m
Q	1.570	R	+12° 21'	1.890, 2.480, 3.070	

Determine distance PQ and RL of point R.

5. (a) Describe the step by step procedure of setting out a simple circular curve by Rankine's Method of deflection angle. [6]
- (b) Two tangents AB and BC intersects at a point B at chainage 210 m. Calculate all data necessary for setting out simple circular curve of radius 100 m and deflection angle of 45° by method of offset from long chord. Take interval between ordinates as 05 m. [7]

Or

6. (a) Draw sketch of simple circular curve showing the following components : [6]
- (i) Deflection angle
 - (ii) Point of tangency
 - (iii) Subchord
 - (iv) Point of curve
 - (v) Unit chord
 - (vi) Angle of intersection.
- (b) Two tangents PQ and QR intersect at chainage 1100 m. The angle of intersection is 140° . Calculate all necessary for setting out a circular curve of radius 250 m by deflection angle method. The peg interval taken is 20 m. Calculate data for field checking. [7]
7. (a) Explain segments of SBPS. (Space Based Positioning System). [6]
- (b) Explain procedure of setting out a tunnel centre line on surface. [7]

Or

8. (a) Explain stepwise procedure of set out road way. [6]
- (b) Explain SBPS system. (Space Based Positioning System). [7]