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[5152]-104

S.E. (Civil) (I Sem.) EXAMINATION, 2017

SURVEYING

(2012 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 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 in the
examination.

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

1. (a) Which are the likely error in plane table surveying ? Explain
how to eliminate them. [6]

(b) The following readings were observed during a reciprocal leveling
with one level : [6]

Instrument at	Staff Readings on		Remark
	P	Q	
P	1.425	2.724	Distance between
Q	1.429	2.504	A & B is 1150 m

P.T.O.

Find :

- (i) the true R.L. of B, if R.L. of A = 500.187 m
- (ii) the combined correction due to curvature and refraction
- (iii) the error in the collimation adjustment of the instrument

Or

2. (a) Find the included angles of the closed traverse PQRSP and correct them for local attraction, if any. [6]

Line	PQ	QR	RS	SP
F.B.	36°10'	109°20'	159°30'	270°20'
B.B.	216°10'	288°40'	341°10'	89°20'

- (b) The eye of an observer is 10 m above the ground. He was able to see the top of a light-house 60 m high just at the level of the horizon. Determine the distance of observer from light-house. [6]

3. (a) Define the following terms : [6]

Swinging, Bubble up, Transiting, Vertical axis

- (b) Two tangents intersect at chainage of 1192 m with deflection angle of 50°30'. Calculate the necessary data for setting out a curve with radius of 300 m by offset from chord produced method. Take peg interval as 30 m. [6]

Or

4. (a) ABCDA is a closed traverse. Determine the missing data in the following table. [6]

Line	AB	BC	CD	DA
Length (m)	230.5	250.2	210.5	—
Bearing	N36°45'E	S82°48'E	S10°15'E	—

- (b) What are transition curves ? Explain its requirement. [6]
5. (a) Enlist and explain the temporary adjustments of a theodolite. [5]
- (b) A tacheometer with constants $K = 100$, $C = 0.3$ was used to observe the following readings : [8]

Instrument at	Staff at	Vertical angle	Staff Readings
	P	+3°15'	1.355, 2.580, 3.935
A	Q	-1°15'	0.985, 1.660, 2.335

Determine the RL of Q. Take R.L. of P = 100.000 m. Also determine distance PQ if horizontal angle PAQ = 68°30'.

Or

6. (a) Explain the basic principle of tacheometry with sketch. [4]
- (b) Derive the distance and elevation formulae for an inclined line of sight with angle of depression and staff is vertical. [4]
- (c) Readings on a vertical staff are taken from a station O which is 30 m from A and 60 m from B. The stadia readings on staff at A are 1.135, 1.284, 1.433 and that on staff at B are 1.025, 1.325, 1.624. Determine the instrument constants. [5]

7. (a) Enlist the major functions that can be performed by Electronic Total Station (ETS). [6]
- (b) Write a short note on Tunnel survey with respect to transferring the alignment through shafts, with sketch. [7]

Or

8. (a) Explain the points to be kept in mind when road project is to be carried out with respect to necessity and marking the tentative alignment of road. [6]
- (b) What is ETS ? Explain the basic features of a total station. [7]