53 (CE 301) SURV-I

2019

SURVEYING–I

Paper : CE 301

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

*Answer **all** the questions.*

1. *(a)* Explain the following methods of plane table surveying : 2×5=10

   (i) Radiation

   (ii) Intersection

   (b) What is contour? Explain the characteristics of contours. 10

2. *(a)* The following bearings were observed with a compass. 10

Line	F.B.	B.B.
AB	74°0'	255°0'
BC	92°0'	270°0'
CD	164°0'	342°0'
DE	177°0'	0°0'
EA	189°0'	9°0'

Where do you suspect the local attraction ? Find the corrected bearings.

(b) Explain reiteration method to determine horizontal angles. Also prepare an observation table. 10

3. *(a)* Derive the expressions for height and distance of an object, when object and instrument stations are in the same vertical plane and the instrument axes are at very different levels. 10

(b) The following readings were obtained in running fly-levels from a bench mark of R.L. 384.705*m*. 10

Back sight : 3.215 1.045 1.049 1.844

Fore sight : 1.224 3.215 2.058

From the last position of the instrument six pegs at 25*m* interval are to be set out on a uniformly falling gradient of 1 in 100, the first peg is to have R.L. of 384.500. Work out the staff readings required for setting the top of the pegs on the given gradient.

4. *(a)* Explain the factors on which the choice of proper contour interval depend. 5

(b) Explain the various methods of orienting a plane table. 5

(c) What is three-point problem ? How is it solved ? 10

5. *(a)* Explain the following : 2×5

(i) Correction for curvature and refraction.

(ii) Advantages and disadvantages of plane table surveying.

(b) To determine the elevation of the top of a building, the following observations were made 5

Instrument Station	Reading on B.M. *(m)*	Angle of elevation	Remarks
A	1.456	12°42'	R.L. of
B	1.052	8°12'	B.M.=250.480*m*

stations A and B and the top of the building are in the same vertical plane. Find the elevation of the top of the building, if the distance between A and B is 100*m*.

(c) What is Indirect-ranging ? How will you carry out indirect ranging ? 5