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 **any five** questions.*

1. *(a)* Define Surveying. Explain Plane and Geodetic Surveying. 2+4

   (b) Differentiate between prismatic compass and surveyor's compass. 6

   (c) A field was surveyed by a chain and the area was found to be 127·34 acres. If the chain used in the measurement was 0·8 per cent too long, what is the correct area of the field ? 4

   (d) What is temporary adjustments of a theodolite ? Explain the sequence of steps followed in temporary adjustments. 4

Contd.

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

AB 74°0′	BA 254°0′
BC 91°0′	CB 271°0′
CD 166°0′	DC 343°0′
DE 177°0′	ED 0°0′
EA 189°0′	AE 9°0′

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

(b) Define the following terms : 2×5

(i) Bench mark

(ii) Parallax

(iii) Line of collimation

(iv) Level surface

(v) Reduced Level.

3. *(a)* Fore bearings of the lines are given, find the back bearing : 5

(i) BC 119°40′

(ii) DE 302°22′

(iii) PQ N20°20′E

(iv) RS S60°24′ W

(v) CD 264°28′

(b) What is Contour ? What are the characteristics of contours ? 10

(c) Write down the procedure of repetition method with a neat observation table. 5

4. *(a)* Explain *any three* methods of chaining on uneven or sloping ground. 6

(b) What is face left and face right observation in a vernier theodolite ? Why is it important to take both face observations ? 4

(c) The following consecutive readings were taken with a level and 3*m* levelling staff. The R.L. of the first point (B.M.) was 200*m* : 0·602, 1·234, 1·860, 2·574, 0·238, 0·914, 1·936, 2·872, 1·824, 2·722.

Rule out a page of a level field book and enter the above readings. Apply check. 10

5. *(a)* The following readings refer to reciprocal levels taken with one level. 10

Instrument near	Staff reading on A	Staff reading on B	Remarks
A	1·820	2·700	Distance AB=1020*m*
B	0·920	1·600	R.L. of A=125·350

Find (a) the true R.L. of B

(b) Combined correction for curvature and refraction.

(b) Define the following terms : 2×5

(i) Local attraction

(ii) Magnetic declination

(iii) Contour gradient

(iv) Contour interval

(v) Trunnion axis.

6. (a) Explain *any four* uses of contour maps. 2×4

(b) With a neat diagram write down the procedure of traversing in plane table surveying. 6

(c) To determine the elevation of the top of a building, the following observations were made : 6

Instrument station	Reading on B.M. (*m*)	Angle of elevation	Remarks
A	1·260	10°45′	R.L. of
B	1·080	7°10′	BM=250*m*

Instrument stations and objects are in the same vertical plane. Find the elevation of the top of the building, if the distance between A and B was 50*m*.
