53 (CE 301) SURV I

2014

SURVEYING-I

Paper : CE 301

Full Marks : 100

Pass Marks : 30

Time : Three hours

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

*Answer **any five** questions.*

1. *(a)* Differentiate between Plane and Geodetic Surveying. Explain the principles of surveying. 10

(b) The following consecutive readings were taken with a level and 5 metre levelling staff on continuously sloping ground at a common interval of 20*m* : 0·385 ; 1·030 ; 1·925 ; 2·825 ; 3·730 ; 4·685 ; 0·625 ; 2·005 ; 3·110 ; 4·485. The reduced level of the first point was 208·125*m*. Rule out a page of a level field book and enter the above readings. Calculate the reduced levels of the points by rise and fall method and also the gradient of the line joining the first and the last points. 10

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

(b) What is face left and face right observations ? Why it is important to take both face observations ? 6

(c) Explain *any four* uses of contour maps. 8

3. (a) 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 ? 5

(b) What is Reciprocal levelling ? Derive an expression to determine the difference in elevation between *any two* points by reciprocal levelling. 10

(c) Differentiate between Prismatic compass and Surveyor's compass. 5

4. (a) Discuss the effects of curvature and refraction in levelling. Find the correction due to each and the combined correction. Why are these effects ignored in ordinary levelling ? 10

(b) Explain the procedure of Repetition method with a neat observation table. 10

5. (a) Define contour. What are the characteristics of contours ? 10

(b) Explain with a neat diagram, the fundamental lines and their desired relations. 10

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

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. 10

(b) Find the back bearings of the following :

(i) BC 119°48′

(ii) DE 354°18′

(iii) PQ N 18°0′ E

(iv) RS S 59°18′ W

(v) CD 266°30′ 5

(c) What do you mean by temporary adjustment of a theodolite ? Explain them. 5

7. Define the following terms : 10×2=20

(i) B.M.

(ii) Parallax

(iii) Line of collimation

(iv) Level surface

(v) Reduced surface

(vi) Local attraction

(vii) Magnetic declination

(viii) Contour gradient

(ix) Contour interval

(x) Cadastral surveying.
