

2014

SURVEYING AND LEVELLING

Paper : ENG-2.6

Full Marks : 100

Time : Three hours

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

Answer question no. 1 and any four from the rest.

1. (a) What do you mean by : *(any five)* 2×5=10
- (i) Shrunk Scale
 - (ii) Reduced Level
 - (iii) Bench Mark
 - (iv) Transiting
 - (v) Swinging the Telescope
 - (vi) Datum Surface
 - (vii) Line of Collimation.

Contd.

(b) Explain the following : (any two) $5 \times 2 = 10$

(i) Principles of Surveying

(ii) Direct Methods of Carrying out Linear Measurements

(iii) Work of surveyor.

2. (a) What do you mean by Surveying ? Explain the Primary Classification of Surveying.

$2+8=10$

(b) The area of the plan of an old survey plotted to a scale of $1\text{cm} = 100\text{m}$ now measures 85cm^2 as worked out with the help of a planimeter. The plan is found to have shrunk so that a line originally 10cm long now measures 9.6cm only. Calculate the shrunk scale and true area of the survey. 10

3. (a) What is the principle of chain surveying ? Describe the method of ranging a line across a ridge, when terminal stations are not intervisible. $2+8=10$

(b) The distance between two stations was 1200m when measured with a 20m chain. The same distance when measured with 30m chain was found to be 1195m . If the 20m chain was 0.05m too long, what was the error in the 30m chain ? 10

4. (a) What do you mean by levelling ? Describe the various types of levelling. $2+8=10$

(b) The following consecutive readings were taken with a levelling instrument at intervals of 20m . $2.375, 1.730, 0.615, 3.450, 2.835, 2.070, 1.835, 0.985, 0.435, 1.630, 2.255$ and 3.630m .

The instrument was shifted after fourth and eighth readings. The first reading was taken on a B.M. of R.L. 100.000m . Find the R.Ls of all the points. Apply usual checks. 10

5. (a) What do you mean by contour and contouring ? Discuss the various characteristics of contours giving suitable sketches. $2+8=10$

(b) What are the various methods of contouring ? Explain any one of them. How will you differentiate between the various methods of contouring ? $6+4=10$

6. (a) What do you mean by orientation of plane table? Explain how orientation of plane table is done. $2+8=10$

(b) What is the principle of plane tabling? Discuss the advantages and disadvantages of plane tabling. $2+4+4=10$

7. (a) Describe the temporary adjustments to be done while setting up the Theodolite.

Describe the method of repetition for measurement of horizontal angle by Theodolite. $6+6=12$

(b) A line was measured by a $20m$ chain which was accurate before starting the day's work. After chaining $900m$, the chain was found to be $6cm$ too long. After chaining a total distance of $1575m$, the chain was found to be $14cm$ too long. Find the true distance of the line. 8