SURVEYING – II

Full Marks – 70

Pass Marks – 28

Time – Three hours

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

Answer *all* the questions.

1. Explain the following methods of plane tabling :

   (i) Radiation

   (ii) Traversing.   5×2=10

2. (a) A theodolite was set up at a distance of 150m from a tower. The angle of elevation to the top of the tower was 9°16', while the angle of depression to the foot of the tower was 2°12'. The staff reading on the B.M. of R.L. 245.364m with the telescope horizontal was 1.254m. Find the height of the tower and the R.L. of the top of the tower.   5

[Turn over

(b) Derive an expression for height and distance of an object when base of the object is inaccessible and object and instrument axes are not in same vertical plane. Also give expression for R.L. of top of the object.   5

3. (a) Explain with the help of an observation table the repitition method to determine the horizontal angle between two given objects.
   5

   (b) Explain in detail the temporary adjustments of a transit theodolite.   5

4. A tachometer is set up at an intermediate point on a traverse course PQ and the following observations are made on a vertically held staff :

Staff station	Vertical angle	Staff intercept	Axial hair readings
P	+ 6°48'	2.480	2.210
Q	+ 5°36'	2.105	1.967

The instrument is fitted with an analactic lens and the constant is 100. Compute the length of PQ and reduced level of Q, that of P being 348.60m.
   10

5. (a) Enlist and explain the functions of each of the instruments required for plane table surveying. 6

   (b) Explain the methods of orienting the plane table. 4

6. For a tachometric surveying derive the distance and elevation formulae for an inclined line of sight with an angle of elevation, when the staff is held vertically. 10

7. Explain the following : 5×2=10

   (i) Principle of standia method

   (ii) Errors in plane table surveying

   (iii) Telescope normal

   (iv) Face left and face right observation

   (v) Tachometric surveying.