(Following Paper ID and Roll No. to be filled in your Answer Book)

PAPER ID : 0023 Roll No. | | | | | | | | | | |

B. Tech.

(SEM. III) ODD SEMESTER THEORY EXAMINATION
2010-11

SURVEYING—I

Time : 2 Hours *Total Marks : 50*

Note : (1) Attempt **all** questions.

(2) All questions carry equal marks.

(3) Any data, if missing, may be suitably assumed.

1. Attempt any **four** parts of the following : **(3×4=12)**

(a) Which errors in theodolite observations are removed by taking mean of :

(i) Left and right face observations

(ii) Readings on two verniers

(iii) Reading on different origin or zero.

(b) A 20 m tape was tested before starting day's work and found to be 0·02 m too short. At the end of the day it was tested again and found to be 0·06 m too long. If the total length measured during the day was 1243·5 m, find the true length.

(c) What is hypotenusal allowance ? Derive a formula for calculating it when the slope is given in degrees and in terms of the gradient.

(d) The bearing of a line is given in an old map as N 56° 30' W. The declination at the time of survey is recorded as 1° 45' E. If the present declination is 2° 30' W, find the magnetic bearing to which the line has to be set now.

(e) Explain the basic principle of EDM.

(f) Explain temporary adjustment in theodolite surveying.

2. Attempt any **two** parts of the following : **(6·5×2=13)**

(a) The following staff readings were observed in sequence 1·324, 2·605, 1·385, 0·638, 1·655, 1·085, 2·125 and 1·555 m. The instrument was shifted after the third and sixth readings. The third reading was taken to an arbitrary B.M. of elevation 100 m. Find the reduced levels of all other points.

(b) What are the effects of curvature and refraction in levelling ? Derive an expression for (i) curvature and (ii) combined correction for curvature and refraction.

(c) Write short notes on the following :

(i) Use of Contours

(ii) Principle of Tacheometry.

3. Attempt any **two** parts of the following : **(6·5×2=13)**

(a) Define (i) Degree of curve, (ii) Apex distance, (iii) Tangent length, (iv) Long chord in simple circular curve.

(b) Explain the basis on which length of transition curve is decided.

(c) A curve of radius 420 m is to be set out by offsets from the long chord. The deflection angle is 60°. Tabulate the offsets from the tangent points at 20 m intervals for half of the curve.

4. Attempt any **four** parts of the following : **(3×4=12)**

(a) What do you understand by orientation of the plane table ? How it is carried out in the field ?

(b) Under what conditions the following methods of plane table surveying are adopted :

(i) Radiation

(ii) Intersection

(iii) Resection.

(c) Describe various triangulation systems.

(d) What do you mean by balancing a traverse ? State various rules for it.

(e) Describe various methods of traversing with a theodolite.

(f) Describe purpose of following equipments in plane table :

(i) Alidade

(ii) U-fork

(iii) Level tube.