Total No. of printed pages = 6

CT-404/Sur-II/4th Sem/2018/M

SURVEYING – II

Full Marks – 70

Time – Three hours

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

PART – A

1. Choose the correct answer from the given options : $5 \times 1 = 5$

   (i) Orienting the plane table is the operation of

   (a) centring the plane table

   (b) plotting points on the paper placed on the plane table

   (c) keeping the plane table in parallel position at all stations

   (d) keeping the plane table parallel to the ground at a station

[Turn over

(ii) When you transit the telescope, you rotate the telescope about

(a) the vertical axis

(b) the optical axis of the telescope

(c) the trunnion axis

(d) the line of collimation

(iii) Curvature correction in linear measurement can be applied as

(a) $d / 2R$ (b) d / R

(c) d^2 / R (d) $d^2 / 2R$

(iv) When the line of sight is inclined, having an angle of depression and staff held vertical, the distance formula in tacheometric surveying is

(a) $Ks + C$

(b) $Ks \cos\theta + C \cos\theta$

(c) $Ks \cos\theta + C$

(d) $Ks \cos^2\theta + C \cos\theta$

(v) The three-point problem in plane tabling involves

(a) determining the position of three points

(b) locating the station occupied by plane table given the position of three points

(c) locating the position of two points given the position of one point

(d) surveying a triangular area

2. State if the following statements are true or false : $5 \times 1 = 5$

(i) Correction for refraction is always subtractive.

(ii) A theodolite with an external focussing telescope and stadia diaphragm can be used as a tacheometer.

(iii) An alidade used with the plane table is used for determining distances of objects.

(iv) A theodolite is often designated by diameter of the horizontal circle.

(v) Optical plummet is used for accurate levelling of the theodolite.

3. Fill in the blanks : 5×1=5

(i) The edge of the alidade used for drawing lines is called ———.

(ii) Plane table is oriented by method of ——— and ———.

(iii) By using ——— the additive constant is made zero in tacheometer.

(iv) A theodolite, in which the line of sight can be reversed by 180° is called ———.

(v) In tacheometric surveying, distance formula for horizontal line of sight is ———.

4. Define the following : 5×1=5

(i) Resection in plane tabling

(ii) Telescope normal in theodolite

(iii) Face right observation

(iv) Tacheometric surveying

(v) Plumbing fork in plane table surveying

5. Match the following : $5 \times 1 = 5$

(i) Plumbing fork	(a) common vertex point
(ii) Reiteration method	(b) vertical angle
(iii) Altitude	(c) centring
(iv) Movable hair method	(d) central hair
(v) Tangential method	(e) subtense method

PART – B

6. Answer the following questions : $5 \times 5 = 25$

(i) Write down the complete procedure to determine horizontal angle by repetition method.

(ii) What are the fundamental lines of a theodolite ? Explain their desired relations.

(iii) With a neat diagram, explain the traversing method in plane table surveying.

(iv) Derive the expressions for height and distance of an object by trigonometric levelling, when the line of sight is at an angle of elevation and object and instrument are in same vertical plane.

(v) Explain the method to determine the constants K and C of a tacheometer by field observation method.

7. To determine the elevation of the top of a flag-staff, the following observations were made :

Inst. Station	Reading on BM	Angle of elevation	Remarks
A	1.456	10°58′	RL of BM
B	1.055	7°12′	= 248.362

Stations A and B and the top of the flag-staff are in the same vertical plane. Find the elevation of top of the flag-staff, if the distance between A and B is 50m. 10

8. What is three-point problem in plane table surveying ? Explain Bessel's graphical method of solving three-point problem. 10