THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE EXAMINATION, DECEMBER 2009

CE 04 305—SURVEYING—II

(2004 Admissions)

Time : Three Hours   Maximum : 100 Marks

*Answer **all** questions.*

Part A

1. (a) What is meant by subtense bar ? How is it used in the field to find the horizontal distance between two points ?

   (b) How will you set a curve by offsets from back targent ?

   (c) What is meant by towers and signals ? Explain them briefly.

   (d) Explain the concept of satellite station.

   (e) What is meant by spherical axcess ? Explain its significance in figure adjustment.

   (f) Discuss the terrestrial co-ordinate system.

   (g) Derive relationships between siderial time interval and mean time interval.

   (h) What is meant by phototheodolite ? How is it used ?

                                                            $(8 \times 5 = 40 \text{ marks})$

Part B

2. (a) (i) Explain the method of determining tacheometric constants.   (7 marks)

   (ii) Two distances of 20 m and 100 m were accuralely measured out and the intercepts on the staff between the outer stadia webs were 0.196 m at the former distance and 0.996 m at latter. Calculate the tacheometric constants.

                                                                    (8 marks)

   Or

   (b) (i) Differentiate between vertical and horizontal subtense method of tachometery.

                                                                     (5 marks)

   (ii) The vertical angles of vanes fixed at 0.5 m and 3.5 m above the foot of the staff held vertically at a point were – 0° 30′ and + 1° 12′ respectively. Find the horizontal distance and the reduced level of the point, if the level of the instrument axis is 125.5 m above Datum.

                                                                  (10 marks)

3. (a) (i) Deduce a condition for well conditioned triangle. (8 marks)

     (ii) Explain the concept of extension of base through base net. (7 marks)

Or

(b) Direction are observed from a satellite station 5, 62.18 m from station C with the following results :—

    A $0°1'0''$; B, $71°54'32''$; C, $296°12'2''$.

The approximate lengths of AC and BC are respectively 8041 m and 10864 m. Calculate the angle ACB.

(15 marks)

4. (a) Find the chronometer ever from the following data for ex meridian observations taken on a star of the meridian.

Latitude of the place	$= 55°0'10.34''\,N$
Mean observed altitude of the star	$= 37°46'28''.65$
R.A. of the star	$= 16^h\,39^m\,44.78^s$
Declination of the star	$= 18°0'31.9''$
Mean siderial time recorded by the chronometer	$= 13^h\,24^m\,15^s$

(15 marks)

Or

(b) Discuss the various methods of determining a zimuth. (15 marks)

5. (a) The following reciprocal observations were made from two points P and Q.

Horizontal distance between P and Q	$= 6996$ m
Angle of elevation of Q at P	$= 1°56'10''$
Angle of depression of P at Q	$= 1°56'52''$
Height of signal at P	$= 4.07$ m
Height of signal at Q	$= 3.87$ m
Height of instrument at P	$= 1.27$ m
Height of instrument at Q	$= 1.48$ m

Find the difference in level between P and Q and the refraction correction. R sin $1'' = 30.88$m.

(15 marks)

Or

(b) (i) Differentiate between Terrestrial photogrammetry and axial photogrammetry. (5 marks)

    (ii) Discuss various methods of planimetric mapping from vertical aerial slot photograph.

(10 marks)

[4 × 15 = 60 marks]