

**THIRD SEMESTER B.TECH. (ENGINEERING) DEGREE
EXAMINATION, DECEMBER 2008**

Civil Engineering

CE 04 305—SURVEYING—II

(2004 Admissions)

Time : Three Hours

Maximum : 100 Marks

Answer all questions.

Part A

1. (a) Distinguish between fixed hair and stadia tacheometry. How will you find horizontal distance by horizontal base subtense tacheometry ?
- (b) Explain the method of curve setting by successive bisection of arcs of chords.
- (c) Explain the significance of reconnaissance in control survey.
- (d) What is meant by phase of signal ? Derive an expression for it.
- (e) What is a spherical triangle ? Discuss its properties.
- (f) Discuss briefly how the LMT is converted to LST.
- (g) What is meant by reciprocal levelling ? State its advantages over other method.
- (h) What are the different types of aerial photographs ? Discuss each, briefly giving their uses.

(8 × 5 = 40 marks)

Part B

2. (a) (i) What is meant by anallactic lens ? What is its significance. (3 marks)
- (ii) To determine the distance between two points C and D, and their elevations, the following observations were taken upon a vertically held staff from two traverse stations A and B. Two tacheometer was fitted with anallactic lens and the constant was 100.

Traverse Station	Ht.of Axis	Coordinates		Staff station	WCB	Vertical angle	Staff reading
		N	E				
A	1.58	218.3	164.7	C	330°20'	+12°12'	1.255
							1.860
							2.465
B	1.50	518.2	207.6	D	20°36'	+10°36'	1.300
							1.885
							2.470

Calculate the R.L's of C and D. Given R.L. of A and B were 500 and 600 respectively and the gradient of CD.

(12 marks)

Or

Turn over

- (b) (i) Draw a neat sketch of a simple curve and mark the salient points. (4 marks)
- (ii) With a neat sketch explain the Rankine's method of setting out curve with chain and theodolite. (11 marks)
3. (a) The attitude of two proposed station A and B 130 km apart are respectively. 220 m and 1160 m. The altitude of two points C and D on a profile between them respectively 308 m and 623 m. The distance AC = 50 KM and AD = 90 KM. Determine whether A and B are intervisible and if necessary find the minimum height of a scaffolding at B assuming A as the ground station each that the new line of sight clears the peak at D by 2 m. (15 marks)

Or

- (b) (i) State the rule of least square. (3 marks)
- (ii) Adjust the following observation :—
- $A = 25^{\circ} 17' 10''.2$ Weight 1
- $B = 28^{\circ} 22' 16''.4$ Weight 2
- $C = 32^{\circ} 40' 28''.5$ Weight 2
- $A + B = 53^{\circ} 39' 23''.1$ weight 2
- $A + B + C = 86^{\circ} 19' 57''.8$ Weight 1. (12 marks)
4. (a) Find the L.A.T of observation of 8 mm at a place in longitude $72^{\circ}26'$ E, corresponding to the L.M.T. of $9^{\text{h}} 25^{\text{m}} 20^{\text{s}}$. The equation of time of G.M. N. is $4^{\text{m}} 34.22^{\text{s}}$ additive to the mean time, and decreases at the rate of 0.24^{s} per hour. (15 marks)

Or

- (b) Discuss two solution of a right angled spherical triangle using Napier's rule. (15 marks)
5. (a) What is meant by axis signal correction ? Deduce an expression for it. (15 marks)

Or

- (b) Find the difference of levels of two points P and Q and the R.L. of P from the following data :—

Horizontal distance between P and Q = 7118 M

Angle of depression to P at Q = $1^{\circ} 32' 12''$.

Height of signal at P = 4.00m.

Coefficient of refraction = 0.07.

R sin 1" = 30.88m.

R.L. of Q = 420.000 m.

(15 marks)

[4 × 15 = 60 marks]