



B.E/B.Tech(Full Time) DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2011

CIVIL ENGINEERING BRANCH

THIRD SEMESTER

CE 9203 SURVEYING I

(REGULATIONS 2008)

Time : 3 hrs

Max.Marks : 100

Instruction : Assume relevant data if necessary

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. The distance between two points measured with a 30 m chain was recorded as 216 m. It was afterwards found that the chain was 10 cm too long. What was the true distance between the points?
2. Enumerate the various methods of ranging a survey line.
3. What is the function of trough compass in plane table surveying?
4. What is meant by magnetic dip?
5. A level was setup between two points A and B and the readings observed were 1.468 and 0.700 respectively. If the RL of point A is +100.000 m, calculate the RL of point B.
6. Distinguish between fly leveling and check leveling.
7. List out any four instrumental errors in theodolite surveying.
8. How closing error in a traverse is distributed using Bowditch's rule?
9. What are the functions of transition curves?
10. What is meant by stopping sight distance?

Part – B (5 x 16 = 80 Marks)

11. (i) A line was measured with a steel tape which was exactly 30 m at 18° C and a pull of 50 N and the measured length was 459.242 m. Temperature during measurement was 28° C and the pull applied was 100 N. The tape was uniformly supported during the measurement. Find the true length of the line if the cross sectional area of the tape was 0.02 cm<sup>2</sup>, the coefficient of thermal expansion per °C=0.0000117 and the modulus of elasticity = 21 x 10<sup>6</sup> N/cm<sup>2</sup>. (8)
- (ii) Briefly explain the methods of chaining on sloping ground. (8)

- 12(a) (i) State three point problem in plane table surveying and describe its solution by Bessel's graphical method. (8)  
(ii) How would you determine the distance between two inaccessible points using plane table surveying? (8)

(Or)

- 12(b) The following bearings were taken in running an open traverse with a compass in a place where local attraction was suspected.

Line	FB	BB
AB	44° 40'	225° 20'
BC	96° 20'	274° 18'
CD	30° 40'	212° 2'
DE	320° 12'	140° 12'

At what stations, do you suspect local attraction? Find the corrected bearing of the lines.

- 13(a) It was required to ascertain the elevation of two points P and Q and a line of levels was run from P to Q. The leveling was then continued to a bench mark of 83.500, the readings being obtained as shown below. Obtain the RL of P and Q.

BS	IS	FS	RL	Remarks
1.622				P
1.874		0.354		
2.032		1.780		
	2.362			Q
0.984		1.122		
1.906		2.824		
		2.036	83.500	BM

(Or)

- 13(b) (i) Describe the temporary adjustments of a leveling instrument. (8)  
(ii) A level was setup at station O. The reading on the staff when held at A 360 m away from O is 2.150 m and is 3.895 m when held at 550 m away. Find the true difference in level between A and B by applying corrections for curvature of earth and atmospheric refraction. (8)

- 14(a) A tacheometer was setup at station A and the following readings were obtained on a vertically held staff.

Instrument station	Staff station	Vertical angle	Hair readings	Remarks
A	BM	- 2° 18'	3.225, 3.550, 3.875	RL of BM = 437.655 m
	B	+ 8° 36'	1.650, 2.515, 3.380	

Calculate the horizontal distance from A to B and RL of B, if the constants of the instruments were 100 and 0.

(Or)

- 14(b) (i) With neat sketches, explain the construction of a transit theodolite. (8)  
(ii) Explain the different methods of theodolite traversing. (8)

- 15(a) Explain any two methods of setting out simple circular curve in the field.

(Or)

- 15(b) Describe the various types of surveys to be conducted for a highway route alignment.