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B.E / B.Tech DEGREE END SEMESTER EXAMINATIONS, NOV/DEC 2012

CIVIL ENGINEERING BRANCH

THIRD SEMESTER

CE 9203 SURVEYING - I

(REGULATIONS 2008)

Time : 3 hrs

Max Marks : 100

Answer ALL Questions

Part – A (10 x 2 = 20 Marks)

1. How would you carry out ranging by a line ranger?
2. 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?
3. How local attraction can be prevented?
4. What are the conditions under which would you select method of intersection in plane table surveying?
5. What is meant by reciprocal leveling?
6. State Simson's rule for calculating the volume of an embankment.
7. List out the errors that can be eliminated by method repetition in horizontal angle measurement with theodolite.
8. State Bowditch's rule for adjusting the closing error in a traverse.
9. List out any four elements of a simple curve.
10. What are the objectives of providing transition curves?

Part – B (5 x 16 = 80 Marks)

11. (i) Explain the various methods employed for chaining on sloping ground. (8)
- (ii) 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 sq.cm, the coefficient of expansion per °C is 0.0000117 and the modulus of elasticity is $21 \times 10^6 \text{ N/cm}^2$. (8)

12(a) The following are the bearings taken on a closed compass traverse.

Line	FB	BB
AB	S37°30'E	N37°30'W
BC	S43°15'W	N44°15'E
CD	N73°00'W	S72°15'E
DE	N12°45'E	S13°15'W
EA	N60°00'E	S59°00'W

Compute the interior angles and correct them for observational errors.

{Or}

- 12(b) (i) What is meant by three point problem? How it can be solved by Bessel's method? (10)
(ii) Explain the sources of errors in plane table surveying. (6)

- 13(a) (i) Explain the construction of a levelling telescope. (8)
(ii) Describe the temporary adjustments of a levelling instrument. (8)

(Or)

- 13(b) The following consecutive readings were taken with a level and 4 m staff on continuously sloping ground at a common interval of 30 m.
0.780, 1.535, 1.955, 2.430, 2.985, 3.480, 1.155, 1.960, 2.365, 3.640, 0.935, 1.045, 1.630 and 2.545
The reduced level of the first point was 180.750. Rule out the page of a level book and enter the above readings. Calculate the reduced levels of the points by height of collimation method and also the gradient of the line joining the first and last points.

- 14(a) With sketches, explain the construction of a transit theodolite.

(Or)

- 14(b) The following lengths and bearings were recorded in running a traverse ABCDE, the length and bearing of EA having been omitted.

Line	Length in m	Bearing
AB	217.5	120° 15'
BC	318.0	62° 30'
CD	375.0	322° 24'
DE	283.5	235° 18'
EA	-----	-----

Calculate the length and bearing of line EA.

- 15(a) What are the objectives of reconnaissance surveys for engineering projects? Describe the details to be collected during reconnaissance for highway projects.

(Or)

- 15(b) The tangents intersect at a chainage of 1190 m with deflection angle of 36°. Calculate all the data necessary for setting out a curve with a radius of 300m by deflection angles, the peg interval being 30 m.