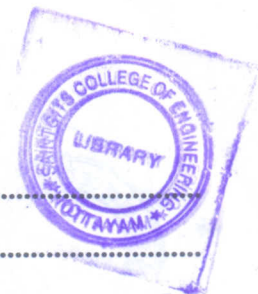


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Reg. No.....

Name.....



B.TECH. DEGREE EXAMINATION, NOVEMBER 2014

Third Semester

Branch : Civil Engineering

CE 010 305—SURVEYING—I (CE)

(New Scheme—2010 Admission onwards)

[Regular/Improvement/Supplementary]

Time : Three Hours

Maximum : 100 Marks

Part A

Answer all questions.

Each question carries 3 marks.

1. What is resection ?
2. Distinguish between a level line and a horizontal line.
3. Enlist the five fundamental lines in a theodolite.
4. Write Simpson's rule for computing area.
5. Determine the radius of a curve if it is designated as a 3° curve on a 30 m. arc.

(5 × 3 = 15 marks)

Part B

Answer all questions.

Each question carries 5 marks.

6. A plot is in the form of a regular polygon. If one of the lines of the hexagon is along the direction N $23^\circ 56' E$ find the bearings of other lines of the figure.
7. Explain different types of benchmarks.
8. What is a substense bar ? Explain its use.
9. Explain the method of calculating the area of a traverse from co-ordinates.
10. Derive the elements of a clothoid.

(5 × 5 = 25 marks)

Part C

Answer all questions.

Each question carries 12 marks.

11. The bearings observed at the stations of a closed traverse are given below. Check whether the bearings are correct. If not, correct the bearings by the method of included angles :

Turn over



AB : 122°15' BA : 302°15'
 BC : 66°00' CB : 243°45'
 CD : 308°15' DC : 133°00'
 DA : 198°00' AD : 15°30'

Or

12. What is a three point problem ? Explain two methods for the solution of three point problem.
13. The page of an old field book is shown below. Some readings are not visible. Determine these readings from the available data :

Staff station	B.S.	I.S.	F.S.	Rise	Fall	R.L.	Remarks
P	0.635					215.915	
Q					0.680		
R			0.865				BM RL 215.685
S		0.785		0.43			
T	0.935				0.320		
U						215.715	

Or

14. The following readings refer to reciprocal levelling observations between two points A and B 1000 m. apart. The reduced level of A is 193.835 m. Find the reduced level of B and the collimation error, if any, of the instrument :

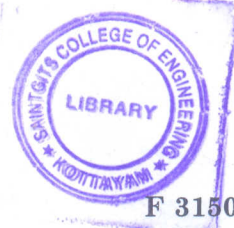
Instrument near		Staff at A	Staff at B
A	...	1.279	2.918
B	...	1.110	2.739

15. Explain how the closing error of a traverse is adjusted by graphical and analytical methods.

Or

16. A traverse was run with a prismatic compass and the lengths and bearings of the lines observed are given below. Check whether or not the traverse closes. If not, balance it using Bowditch's rule :

Line		AB	BC	CD	DA
Length (m) ...		105.80	142.50	188.80	188.90
Bearing ...		N40°45'W	N51°30'E	S48°15'E	S76°45'W



17. A chain line was divided into eight sections of 12 m. each and offsets were taken from the chainline to a fence. The lengths of offsets were (in metres) : 0, 5.2, 7.4, 8.6, 7.9, 8.5, 8.2, 9.1 and 7.6. Find the area between the chain line, the first and last offsets, and the boundary :

- (i) By Trapezoidal rule ; and
- (ii) By Simpson's rule.

Or

18. A level section has a formation width of 6 m. and side slope 2 : 1. The central height is 2.5 m. The cross-section is constant over a length of 40 m. Find the volume of the earthwork.

19. A curve of radius 400 m. and deflection angle 85° was to be set from offsets from the chord produced. The chainage of the first tangent point is 1002.35 m. Calculate the first five offsets from the charts produced to set out the curve.

Or

20. Two straight roads intersect at chainage 2050 m. The angle of deflection is $40^\circ 30'$. The combined curve consists of a circular arc of radius 600 m. and two spirals 120 m. long. Find the chainages at the beginning and end of the three curves.

(5 × 12 = 60 marks)