## FACULTY OF ENGINEERING \& TECHNOLOGY

## S.E.(Civil) Year Examination-June-2015 <br> Surveying-II <br> (Revised)

Time: Three Hours
Maximum Marks: $\mathbf{8 0}$
"Please check whether you have got the right question paper."
i) Q. No. 1 and Q. No. 6 are compulsory.
ii) Answer any two questions from each section from remaining questions
iii) Figure to right indicates full marks.
iv) Assume suitable data wherever necessary.

SECTION-A
Answer the following (any five)

1) What is the principle of triangulation in surveying?
2) Give the classification of Triangulation system.
3) What is meant by eccentricity of signal?
4) State different methods of correlates.
5) State the principle of least squares.
6) How would you determine the inter visibility of Triangulation station?
7) Enlist various types of signals.
8) Give the mathematical expression for the correction to be applied to cylindrical signals.

Q. 2 a) What is meant by satellite station and reduction to centre? Derive the expression when the satellite station is
measured from left of true station.
b) Explain any one method to complete the sides of spherical triangle.
Q. 3 a) In Triangulation adjustment state laws of weights. ..... 08
b) What is phase of signal? Derive formula for the correction to be applied to cylindrical signal when the bright 07 portion is bisected.

a) What is the most probable value? Explain in detail how it is determined.
b) Find the most probable values of the angles $A$ and $B$ from the following observation at a station o :
$\mathrm{A}=19^{\circ} 48^{\prime} 36.6^{\prime \prime}$ weight 2
$\mathrm{B}=54^{\circ} 37^{\prime} 48.3^{\prime \prime}$ weight 3
$\mathrm{A}+\mathrm{B}=105^{\circ} 26^{\prime} 28.5^{\prime \prime}$ weight 4
Q. $5 \quad$ Write short notes on: (any three)

1) City surveying
2) Topographical survey
3) Adjustment of a quadrilateral with a central station by method of least squares.
4) Base line measurements.
5) Towers in Geodetic surveying.

## SECTION-B

Answer the following: (any five)

1) Define simple circular curve.
2) Give the relation between radius of curve and degree of curve.
3) What do the term 'rear tangent' and 'forward tangent' means?
4) Define super elevation. Why is it provided?
5) Give mathematical expression for Apex distance in simple circular curve.
6) Enlist different types of electronic distance measurement instrument.
7) State the properties of electromagnetic waves.
8) State the difference between single plane and double plane method.
Q. 7 a) Explain the various methods of determining the length of transition curve. ..... 07
b) Describe how would you set a simple circular curve by Rankines deflection angle method. ..... 08
Q. 8 a) Derive the relationship between the parts of compound curve. If $\Delta, T_{S}, T_{l}$ and $\mathrm{R}_{\mathrm{S}}$ is given. Required $\Delta_{1}, \Delta_{2}$ and ..... 07
$\mathrm{R}_{\mathrm{L}}$.b) Explain modulation in E.D.M08
Q. 9 a) Explain fundamental measurements in total station. ..... 07
b) Find the R.L of Q from the following observations: ..... 08
Horizontal distance between $\mathrm{P} \& \mathrm{Q}=9290 \mathrm{~m}$
Angle of elevation from P to $\mathrm{Q}=2^{\circ} 06^{\prime} 18^{\prime \prime}$
Height of signal at $\mathrm{Q}=3.96 \mathrm{~m}$ Height of instrument at $\mathrm{p}=1.25 \mathrm{~m}$
Coefficient of refraction $=0.07$
$R \sin 1 "=30.88 \mathrm{~m}$
R.L. of $\mathrm{P}=400 \mathrm{~m}$.
Q. $10 \quad$ Write short notes on (any three) ..... 15
9) Ideal transition curve.
10) Shift of curve.
11) Axis signal correction.
12) Correction for curvature and refraction.
13) Lemniscates curve
