

**SUBJECT CODE NO:- P-304**  
**FACULTY OF ENGINEERING AND TECHNOLOGY**  
**S.E. (Civil) Examination MAY/JUNE-2016**  
**Surveying - II**  
**(Revised)**

[Time: Three Hours]

[Max Marks:80]

“Please check whether you have got the right question paper.”

N.B

- i) Q.No.1 and Q.No.6 are compulsory.
- ii) Answer any two questions from remaining from each section.
- iii) Figures to the right indicate full marks.
- iv) Assume suitable data, if necessary.

**Section A**

- Q.1 Answer the following : (Any Five) 10
1. What is meant by triangulation? In what way does it differ from traversing?
  2. Compare the various triangulation figures mentioning their suitability.
  3. List out the different corrections that may be necessary for the measured length of a base line.
  4. Enlist different kinds of errors in surveying
  5. What are towers in geodetic surveying?
  6. How strength of figure is determined.
  7. Classify different triangulation systems.
- Q.2 a) What is meant by a satellite station and reduction to Centre? Derive the expression for reducing the angles measured at the satellite station to Centre. 08
- b) Explain briefly the various types of signals giving their merits and demerits 07
- Q.3 a) Define: 08
1. Independent quantity
  2. Conditioned quantity
  3. Weight of an observation
  4. Most probable value
- b) An angle has been measured under different field conditions with the results as follows: 07
- |                       |                       |
|-----------------------|-----------------------|
| $28^{\circ} 24' 20''$ | $28^{\circ} 24' 00''$ |
| $28^{\circ} 24' 40''$ | $28^{\circ} 24' 40''$ |
| $28^{\circ} 24' 40''$ | $28^{\circ} 24' 20''$ |
| $28^{\circ} 25' 00''$ | $28^{\circ} 24' 40''$ |
| $28^{\circ} 24' 20''$ | $28^{\circ} 25' 20''$ |
- Find: - 1)  $E_s$  2)  $E_m$
- Q.4 a) Explain computation of sides of a spherical triangle. 07
- b) What is figure adjustment in case of triangulation survey? 08
- Q.5 Write short note on (Any Three) 15
1. Base line measurement
  2. Method of correlates
  3. Route surveying
  4. Setting out a bridge
  5. Weisbach triangle

**Section-B**

- Q.6 Answer the following : (Any Five) 10
1. Enlist mathematically the elements of simple circular curve.
  2. What are the different methods of curve setting?
  3. Give the difference between simple circular curve and compound curve.
  4. Explain the principle of EDM.
  5. What is trigonometrical leveling?
  6. Differentiate between EDM and total station.
  7. How does the measurement of distance with an EDM instrument differ from the conventional typing?
- Q.7 a) Explain setting of simple circular curve by offsets from chord produced method. 07  
b) Two tangents AB and BC intersect at B, another line DE intersect AB & BC at D and E such that  $\angle ADE = 150^\circ$  &  $\angle DEC = 140^\circ$ . The radius of the first curve is 200m and that of second is 300m. Calculate all the data necessary for setting out the compound curve. 08
- Q.8 a) Explain modulation in E.D.M. 07  
b) State the properties of electromagnetic waves. 08
- Q.9 a) Derive the expression for ideal transition curve. 08  
b) The following reciprocal observations were made from two points P and Q. 07  
Horizontal distance between P and Q = 4860m.  
Angle of elevation of Q at P =  $1^\circ 5' 21''$   
Angle of depression of P at Q =  $1^\circ 0' 50''$   
Height of instrument at P = 1.35m.  
Height of signal at P = 6.10m.  
Height of instrument at Q = 1.38m.  
Height of signal at Q = 6.21m.

Find the difference in level between P and Q and the coefficient of refraction. Take  $\sin 1'' = 30.88m$

- Q.10 Write short note on (Any Three) 15
1. Axis signal correction
  2. Shift of curve
  3. Super elevation
  4. Phase comparison
  5. Lemniscate curve.