B.E.(with Credits)-Regular-Semester 2012-Civil Engineering Sem V

CE506 - Surveying-II

P. Pages : 2 **GUG/W/16/3682**

Time : Three Hours * 3 9 4 7 * Max. Marks : 80

Notes : 1. All questions carry equal marks.
2. Assume suitable data wherever necessary.
3. Illustrate your answers wherever necessary with the help of neat sketches.
4. Use of nonprogrammable calculator is allowed.

1. a) Explain the theory of stadia tacheometry. **6**

b) A tacheometer was set up at a st^{n} C and the following readings were obtained on a staff vertically held. **10**

Inst. St^{n}	Staff St^{n}.	Vertical Angle	Hair Reading	Remark RL of B.M. = 750.50 M
C	B.M.	– 5º 20'	1.150, 1.800, 2.450	
C	D	+8º 12'	0.750, 1.500, 2.250	

Calculate the horizontal distance. CD and RL of D, when the constants of instrument are 100 and 0.15.

OR

2. a) Discuss the methods of tacheometry. **6**

b) The following observations were taken with a tacheometer fitted with an anallatic lens, the staff being held vertically. The constant of the tacheometer is 100. **10**

Inst. St^{n}	Height of Instrument	Staff St^{n}.	Vertical Angle	Staff Reading	Remark
P	1.255	B.M.	– 4º 20'	1.325, 1.825, 2.325	R.L of B.M = 255.750 M
P	1.255	A	+6º 30'	0.850, 1.600, 2.350	
B	1.450	A	– 7º 24'	1.715, 2.315, 2.915	

Calculate the RL of B and the distance between A and B.

3. a) The probable error of direction measurement is 1.25 seconds. Compute the maximum value of R if the maximum probable error desire is **8**
a) 1 in 25000 and b) 1 in 10000.

b) What is meant by a satellite St^{n} and reduction to centre? **5**

c) Explain tape correction for Temperature. **3**

OR

4. a) A steel tape 20m long standardised at 55ºF with a pull of 10 kg was used for measuring a base line. Find the correction per tape length, if the temperature of the time of measurement was 80ºF and the pull exerted was 16 kg weight of 1 cubic cm of steel = 7.86 g, wt of tape = 0.80 kg and E = 2.109×10^{6} kg/cm^{2}. Coefficient of expansion of tape per 1ºF = 6.2×10^{-6}. **6**

b) Explain how you would extend a base line. **5**

c) Explain Geodetic surveying. **5**

5. a) Derive a relation between the radius and degree of curve. **4**

b) Two tangents AB and BC intersect at B. Another line DE intersects AB and BC at D and E such that $\angle ADE = 150^o$ and $\angle DEC = 140^o$. The radius of the first curve is 200M and that of second is 300M. Chainage of B is 950M. Calculate all data necessary for setting out the compound curve. **12**

OR

6. a) Derive an expression for an ideal transition curve. **8**

b) What are vertical curves explain its importance in highway. **8**

7. a) Define following astronomical terms. **8**

a) Celestial sphere.

b) Zenith and Nadir.

b) State and explain lands of weight. **8**

OR

8. a) The standard meridian time in India is 82º 30'E. Find the local mean time of the places having longitudes. If standard mean time at any instant is 18º 20'E for @25ºE and 25ºW. **10**

b) Explain theory of least squares. **6**

9. a) Explain equilibrium theory. **8**

b) Write short notes on : **8**

a) Sounding machine.

b) Fathometer.

OR

10. a) A camera having focal length of 200MM is to be used to take a vertical photograph of a terrain having an average elevation of 2000 M at what height above datum the air craft should fly to have photograph to a scale of 1:5000. **8**

b) Derive an expression to calculate focal length of a photo theodolite with a neat sketch. **8**

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