

Code: CE3T5

**II B.Tech - I Semester – Regular Examinations - January 2014**

**SURVEYING  
(CIVIL ENGINEERING)**

Duration: 3 hours

Marks: 5x14=70

Answer any FIVE questions. All questions carry equal marks

1. a) Mention the different principles in Surveying? List the functional classification of surveying. 7 M
  
- b) The distance between two stations was measured with a 20m chain and found to be 1500 meters. The same was measured with a 30m chain and found to be 1476m. If the 20m chain was 5 cm too short, what was the error in the 30m chain? 7 M
  
2. a) Differentiate between local attraction and magnetic declination? 7 M

b) The following bearings were observed in running a closed traverse

Line	F.B.	B.B.
AB	75°5'	254°20'
BC	115°20'	296°35'
CD	165°35'	345°35'
DE	224°50'	44°5'
EA	304°50'	125°5'

At what stations do you suspect the local attraction?

Determine the correct magnetic bearings. If declination was 5°10' E, what are the true bearings. 7 M

3. a) What are the various temporary adjustments performed on a Dumpy Level before taking readings? What is reciprocal levelling? 7 M

b) The following consecutive readings were taken with a level and a 4.0 m staff on a 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 A was 180.750 m. Enter the above readings in level field book page. Calculate the reduced levels by both H.I. and Rise and Fall methods. Also calculate the gradient of the line joining the first and last points. 7 M

4. a) List out the various general methods in calculating areas. 7 M

b) The following perpendicular offsets were taken from a chain line to an irregular boundary. Calculate the area between the chain line, boundary and the end offsets. 7 M

Chainage	0	10	25	42	60	75m
Offset	15.5	26.2	31.8	25.6	29.0	31.5

5. a) What are the two different methods of measuring a horizontal angle by Theodolite and explain any of them in detail. 7 M

b) What are the different errors in Theodolite work and how are they eliminated? 7 M

6. a) Explain briefly the Tangential method in Tacheometry? 7 M

b) Two observations were taken on a staff by means of a Tacheometer. The readings were 1m and 3 m with vertical angles of  $-7^{\circ}$  and  $-1^{\circ}$  respectively. Determine the horizontal distance of the staff station from the instrument. Also find its reduced level if that of the instrument axis was 100.000 m 7 M

7. a) What are the different elements of a simple circular curve? What do you mean by degree of curvature? Derive an expression between the degree of curvature and radius of a curve. 7 M

b) Two straights AB and BC intersect at a chainage of 4242.0 m. The angle of intersection is  $140^{\circ}$ . It is required to set out a  $5^{\circ}$  simple circular curve to connect the straights. Calculate the chainages of all points of tangency.

7 M

8. a) What is Global Positioning System and explain the concept with a neat diagram?

7 M

b) What are the different applications of GPS in the field of Transportation?

7 M