TCE-303 1238 Printed Pages : 4

Paper Code & Roll No. to be filled in your Answer Book

Roll No.

B. Tech. II Year (III Sem.)

Odd Semester Examination-2015

BASIC SURVEYING

Time : 3 Hours] *[Maximum Marks :100*

Answer Any Four (4×5=20)

1. Write note on surveying?
2. Distinguish between compensating and cumulative error with suitable example.
3. Explain the fundamental lines of theodolite and its desired relationship.
4. In an old map a line AB was drawn to a magnetic bearing of $5^0 30'$ the magnetic declination at the time being 1^0 East. To what magnetic bearing should the line be set now if the present magnetic declination is $8^0 30'$ East.
5. What is declination?

Answer Any Four (4×5=20)

1. Define the term agonic and isogonic lines.

2. Define the following term : (1) level surface (2) Base line (3) Datum

3. What do you mean by interpolation of contour?

4. Briefly describe any one method of interpolation.

5. Short note on most probable error, most probable limit & maximum limits of the quantity.

Answer Any Two (2×10=20)

1. The elevation of a point P is to be determined by observation from two adjacent stations of a tacheometry survey. The staff was held vertically upon the point and the instrument is fitted within an anallactic lens, the constant of instrument being 100. Compute the elevation of the point P from the following data, taking both the observation as equally trustworthy:

inst. station	height of axis	staff point	vertical angle	staff reading	elevation of station
A	1.42	P	+2°24'	1.230, 2.055, 2.880	77.75m
B	1.4	P	-3°36'	0.785, 1.800, 2.815	97.135m

Also calculate the distance of A and B from P.

2. What are the temporary adjustment of theodolite. Explain the repetition method for measurement of horizontal angle with the help of theodolite.

3. What is the principle of stadia system? Derive the formula for distance and elevation for inclined sight and staff held vertical.

Answer Any Two (2×10=20)

1. The following consecutive reading where taken with dumpy level and 5m staff on continuous sloping ground at common interval of 15m. The first point having an elevation of 185.275m. Calculate the reduced level of the point by rise and fall method and the gradient of the line joining the first and last point. Reading are 0.415,1.025, 2.085, 2.925, 3.620, 4.595, 0.715, 2.115, 3.090, 4.405

2. A steel tape of nominal length 30 m was suspended between support to measure the length of the line. The measured length of the line on the slope of angle $3^{0}50'$ is 29.859m.The mean temperature during the measurement was 12^{0} C and the pull applied was 100 N . If the standard length of the tape is 30.005m at 20^{0} C, and the standard pull is 45.0 N, calculate the correct horizontal length. Take the weight of the tape is 0.15N/m, its cross sectional area is 2.5 mm^2, Coefficient of linear expansion : $1.15 \times 10^{-5}/^{0}C$ and $E=2.1 \times 10^{5}$ N/mm^2.

3. Draw a neat sketch of circular curve define and show the following notation thereon :

(i) back tangent (ii)forward tangent (iii) point of curve (iv) point of tangency (v) angle of intersection (vi) angle of deflection (vii) long chord (viii) apex distance (ix)mid ordinate (x) point of intersection

Answer Any Two (2×10=20)

1. The chainage of the intersection point of two straights is 110+50 and the deflection angle is $45^0 20'$. A circular curve of 250 m radius is to be set out to connect the two straights. Calculate the necessary data for setting out the curve by the method of offset from chord produced.(Length of one chain =20m with 100 links and peg interval =20 m or 100 links).

2. Prove that: (a) shift bisect the transition curve

(b) transition curve bisect the shift

3. A highway curve having a deflection angle of 78^0 is desired for a maximum speed of 120km/hr a maximum centrifugal ratio of ¼ and a maximum rate of change of radial acceleration of 0.3m/ sec^2/sec.The combined curve consists two cubic spiral and a circular curve. Calculate (i) the radius of the circular curve (ii) the length of the cubic spiral (iii) the total length of the combine curve (iv) the chainage of all salient point if the chainage of the point of intersection is 3100.

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