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10MN54

Fifth Semester B.E. Degree Examination, Dec.2018/Jan.2019
Mine Surveying – II

Time: 3 hrs. Max. Marks:100

Note: ***Answer any FIVE full questions, selecting at least TWO questions from each part.***

PART – A

1 a. Define tachometric survey? A tachometer was setup at a station A and the readings on a vertically held staff at B were 2.255, 2.605 and 2.955, the line of sight being at an inclination of +8°24′ another observation on the vertically held staff at B.M gave the readings 1.640, 1.920 and 2.200, the inclination of line of sight being +1°6′. Calculate the horizontal distance between A and B if the R.L of B.M is 418.685 meters. The constants of the instruments were 100 and 0.3. **(10 Marks)**

b. Derive an expression for finding constants K and C? The elevation of a point P is to be determined by observations from two adjacent stations of a tachometric survey. The staff was held vertically upon the point, and the instrument is fitted with an anallactic lens, the constants of the instruments being 100. Compute the elevation of the point P form the following data, taking both the observations as equally trust worthy. **(10 Marks)**

2 a. Define Triangulation survey. List the objective of Triangulation survey. Classify the different types of Triangulation system. **(10 Marks)**

b. A steel tape 20m long standardized at 55°F with a pull of 10kg was used for measuring a baseline, find the correction per tape length, if the temperature at the time of measurement was 80°F and the pull exerted was 16kg weight of 1 cubic cm of steel = 7.86g, weight of tape = 0.8kg and $E = 2.109 \times 10^6$ kg/cm^2 coefficient of expansion of tape per $1°F = 6.2 \times 10^{-6}$. **(10 Marks)**

3 a. Two tangents intersect at chainage 59 + 60, the deflection angle being 50°30′. Calculate the necessary data for setting out a curve of 15 chains radius to connect the two tangents if it is intended to set out the curve by offsets from chords. Take peg interval equal to 100 links, length of the chain being equal to 10 meters (100 links) **(10 Marks)**

b. It is proposed to connect two straights of a Road by a simple circular curve, if the maximum speed of the vehicle is 60km/hr and the centrifugal Ratio for the Road is ¼. What should be the minimum Radius of the curve in meter? Explain the procedure to set out a circular curve by Rankin's method. **(10 Marks)**

4 A Railway embankment is 10m wide with side slopes $1\frac{1}{2}$ to 1. Assuming the ground to be level in a direction transverse to the centre line. Calculate the volume contained in a length of 120 meters, the center heights at 20m intervals being in meters 2.2, 3.7, 3.8, 4.0, 3.8, 2.8, 2.5, using

i) Trapezoidal Rule
ii) Prismoidal Rule. **(20 Marks)**

PART – B

5 a. Explain the purpose of correlation survey. **(08 Marks)**

b. In a Weisbach triangle the azimuth of plumb plane mark by two wire A and B is $115°23'49''$ and C is the theodalite station on the south side of Eastern prolongation of AB, Given the following data, calculate the azimuth line CD, illustrate your answer by sketch, AB = 3.481mts BC = 2.674mts, CA = 6.155mts, $\angle ACD = 179°14'33''$, $\angle BCD = 179°10'17''$. **(12 Marks)**

6 a. Explain with a sketch the tape triangulation method of stope surveying. **(10 Marks)**

b. Explain with a neat sketch the ray method of stope surveying. **(10 Marks)**

7 Explain in detail the method of measurement of surface subsidence to determine the horizontal and vertical subsidence. **(20 Marks)**

8 a. Explain in detail

i) Systemmatic Error

ii) Accidental error. **(10 Marks)**

b. Adjust closing errors ;

$A = 110°20'48''$, Weight = 4

$B = 92°30'12''$, Weight = 1

$C = 56°12'00''$, Weight = 2

$D = 100°57'04''$, Weight = 3 **(10 Marks)**

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