CBCS SCHEME

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17MN45

Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Mine Surveying - I

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions, choosing ONE full question from each module.*

Module-1

1   a. In case of a hill and forest, it was decided to chain the linear distance. Discuss the kind of obstacle to chaining / ranging is expected and how to measure the distance in both cases between two points. **(10 Marks)**

   b. B & C are two points on the opposite banks of a river along a chain line ABC which crosses the river at right angles to the bank. From a point 'P' which is 150m from 'B' along the bank and the bearing of A is 215^0 30' and the C is 305^0 30' from 'P'. If the length of AB is 200m , find the width of the river. **(10 Marks)**

OR

2   a. A pentagon of ABCDE was surveyed starting from the point 'B' and the bearings of AB were found to be 32^0 40'. Compute the bearing of the other sides. **(10 Marks)**

   b. Explain 4 cases to measure the linear distance between two points , when there is obstacle to chaining but not ranging and when it is not possible to chain around the obstacle. **(10 Marks)**

Module-2

3   a. The following consecutive readings were taken with a level and 5 metre leveling staff on continuously sloping ground at a common internal of 20m ; 0.385 ; 1.030 ; 1.925 ; 2.825 ; 3.730 ; 4.685 ; 0.625 ; 2.005 ; 3.110 ; 4.485. The reduced level of the first point was 208.125m. Rule out a page of a level field book and enter the above readings. Calculate the reduced levels and determine the gradient of the line joining first and last point. **(10 Marks)**

   b. How to balance a back right and fore sight in case of :
      i) Even ground   ii) Slope   iii) Curvature? **(10 Marks)**

OR

4   a. The following staff readings were observes successively with a level , the instrument having been moved after third, sixth and eight reading. 2.228 ; 1.606 ; 0.988 ; 2.090 ; 2.864 ; 1.262 ; 0.602 ; 1.982 ; 1.044 ; 2.684m.
      Enter the above readings in a page of level book and calculate the R.L of points , if the B.M is 432.384m. **(10 Marks)**

   b. Derive and expression for Curvature correction , Refraction correction and Combined correction due to the effect of curvature and refraction in leveling. **(10 Marks)**

Module-3

5   a. The Triangulation survey of a colliery is in form of a braced quadrilateral ABCD with AC and BD are the diagonals. The following mean value of included angles are observed as mentioned below. State the various adjustments to be followed for the braced quadrilateral and apply the adjustments for the same. **(10 Marks)**

   B$\hat{A}$C = 63^0 35' 43" , A$\hat{B}$D = 40^0 53' 38" , C$\hat{B}$D = 34^0 29' 53" , B$\hat{C}$A = 41^0 0' 28" ,
   A$\hat{C}$D = 45^0 32' 18" , C$\hat{D}$B = 58^0 57' 08" , B$\hat{D}$A = 37^0 48' 48" , D$\hat{A}$C = 37^0 41' 47".

b. With the help of neat sketches, explain the major characteristics of contour lines. **(10 Marks)**

OR

6 a. Prove that the well conditioned triangle is the best shape for triangulation survey. **(10 Marks)**
   b. Explain the methods of interpolation of contours. **(10 Marks)**

Module-4

7 a. A series of offsets were taken from a chain line to a curved boundary line at intervals of 15m in the following order. 0 , 2.65 , 3.80 , 3.70 , 4.60 , 4.95 , 5.85m. Compute the area.
      i) Average ordinate rule   ii) Trapezoidal rule   iii) Simpson's rule. **(10 Marks)**
   b. Explain the process of determination of volume from spot level and contour. **(10 Marks)**

OR

8 a. A rectangular plot ABCD forms the plane of a pit excavated for box cut. E is point of Intersection of the diagonals. Calculate the volume of the excavation in cubic M from the following data : **(10 Marks)**

Point	A	B	C	D	E
Original level	45.2	49.8	51.2	47.2	52
Final level	38.6	39.8	42.6	40.8	42.5

   b. Explain the method of determining area for irregular boundaries. **(10 Marks)**

Module-5

9 a. Explain the miscellaneous operation / applications of theodolite apart from horizontal and vertical angle measurements. **(10 Marks)**
   b. Determine the dependent and independent co-ordinates of the following traverse.

Line	Length (m)	R.B
AB	232	N 32^0 12' E
BC	148	S 41^0 24' E
CD	417	S 22^0 24' W
DE	372	N 68^0 24' W

(10 Marks)

OR

10 a. Describe how would you set up a theodolite to give location and measure a horizontal angle by repetition method. **(10 Marks)**
    b. Explain the methods of Balancing the traverse. **(10 Marks)**

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