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10CV34

**Third Semester B.E. Degree Examination, Dec.2016/Jan.2017**  
**Surveying – I**

Time: 3 hrs.

Max. Marks:100

**Note: Answer FIVE full questions, selecting atleast TWO questions from each part.**

**PART – A**

- 1 a. Distinguish between precision and accuracy. (04 Marks)  
b. Discuss in brief the basic principles of surveying. (08 Marks)  
c. Differentiate between plane and geodetic surveying. (08 Marks)
  
- 2 a. Define ranging. Explain with a neat sketch the working of a line ranger. (06 Marks)  
b. Explain the different methods of chaining on a sloping ground. (06 Marks)  
c. A 30 m chain was used for the measurement of a distance. After chaining 900 m, the chain was found to be 12 cm too long and after chaining another 1800 m, it was found to be 18 cm too long, calculate the true distance if the chain was correct before commencement. (08 Marks)
  
- 3 a. Define chain surveying and explain the principle on which chain survey is based. (06 Marks)  
b. Explain the various methods for determining the width of a river. (06 Marks)  
c. In passing an obstacle in the form of a pond, stations A and D, on the main line were taken on the opposite sides of pond. On the left of AD, a line AB 200m long was laid down and a second line AC 250 m long was ranged on the right of AD. The points B, D and C being in the same straight line. BD and DC were then chained and found to be 125 m and 150 m respectively. Find the obstructed length AD. (08 Marks)
  
- 4 a. Distinguish between prismatic compass and surveyor's compass. (08 Marks)  
b. Convert the following whole circle bearings to quadrantal bearings. i)  $22^{\circ}30'$  ii)  $170^{\circ}12'$  iii)  $211^{\circ}54'$  iv)  $327^{\circ}24'$ . (04 Marks)  
c. Determine the values of included angles in the closed traverse ABCD conducted in the clockwise direction, given the following fore-bearings of their respective lines.  
Line ..... FB  
AB .....  $40^{\circ}$   
BC .....  $70^{\circ}$   
CD .....  $210^{\circ}$   
DA .....  $280^{\circ}$   
Apply the check. (08 Marks)

**PART – B**

- 5 a. What is local attraction? How it is detected and eliminated? (10 Marks)  
b. The following bearings were observed with a compass.  
Line ..... FB ..... BB  
AB .....  $74^{\circ}0'$  .....  $254^{\circ}0'$   
BC .....  $91^{\circ}0'$  .....  $271^{\circ}0'$   
CD .....  $166^{\circ}0'$  .....  $343^{\circ}0'$   
DE .....  $177^{\circ}0'$  .....  $0^{\circ}0'$   
EA .....  $189^{\circ}0'$  .....  $9^{\circ}0'$   
Where do you suspect local attraction? Find the correct bearings. (10 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.  
2. Any revealing of identification, appeal to evaluator and /or equations written eg,  $42+8=50$ , will be treated as malpractice.

- 6 a. Define the following terms :
- Reduced level
  - Back sight
  - Level surface and
  - Line of collimation. (04 Marks)
- b. List and explain the temporary adjustments of a dumpy level. (06 Marks)
- c. Two points A and B are 1530 m apart across a wide river. The following reciprocal levels are taken with one level.
- | Level @ . . . . . | Reading | on (m) |
|-------------------|---------|--------|
|                   | A       | B      |
| A . . . . .       | 2.165   | 3.810  |
| B . . . . .       | 0.910   | 2.355  |
- The error in the Collimation adjustments of the level is  $-0.004\text{m}$  in 100 m. Calculate the true difference of levels between A and B and the refraction. (10 Marks)
- 7 a. Describe with the help of sketches at least eight characteristics of contours. (08 Marks)
- b. The following staff readings were observed successively with level, the instrument having been moved after 2<sup>nd</sup>, 4<sup>th</sup> and 8<sup>th</sup> readings.  
0.875, 1.235, 2.310, 1.385, 2.930, 3.125, 4.125, 0.120, 1.875, 2.030, 3.765. The first reading was taken with the staff held upon a bench mark of elevation 132.135 m. Enter the readings in the level-book form and reduce the levels. Apply the usual checks. Find also the difference in the level between the first and last point. (12 Marks)
- 8 a. Discuss the advantages and disadvantages of plane table surveying over other methods. (08 Marks)
- b. Define three-point problem and explain how it is solved by Bessel's graphical method. (12 Marks)

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