

DIPLOMA IN CIVIL ENGINEERING/DCLE(G)/  
DCLEVI

Term-End Examination

December, 2013

BET-023 : ELEMENTS OF SURVEY

Time : 2 hours

Maximum Marks : 70

Note : Question number 1 is compulsory. Attempt any four questions from the remaining. All questions carry equal marks.

1. Select the most appropriate answer for each of the following multiple choice objective type question.

7x2=14

(a) Number of links in 30m chain are:

- (i) 150
- (ii) 100
- (iii) 66
- (iv) 16

(b) Fore Bearing of a line is  $N 35^\circ W$ , Back Bearing of the same line will be :

- (i)  $N 35^\circ E$
- (ii)  $S 35^\circ W$
- (iii)  $S 35^\circ E$
- (iv)  $W 35^\circ N$

- (c) Cross hairs in surveying telescopes are fitted :
  - (i) In the objective glass
  - (ii) At the centre of telescope
  - (iii) At optical centre of the eyepiece
  - (iv) In front of the eye piece
- (d) Plotting of inaccessible points on a plane table is done by :
  - (i) Radiation Method
  - (ii) Traversing Method
  - (iii) Intersection Method
  - (iv) Back Ray Method
- (e) The operation consisting of revolving the telescope through  $180^\circ$  in a vertical plane about its horizontal axis is called :
  - (i) Face Left
  - (ii) face Right
  - (iii) Transiting
  - (iv) Traversing
- (f) Base line is an essential part of a :
  - (i) Triangulation Survey
  - (ii) Route Survey
  - (iii) Contour Survey
  - (iv) Profile Survey
- (g) The line Normal to the plumb line is known as :
  - (i) Horizontal line
  - (ii) Level Line
  - (iii) Vertical line
  - (iv) Datum line

- (a) What are the different types of chain used in surveying ? Explain briefly. 7
- (b) A 20m chain was found correct at the time of start of the survey. A line measured with it was found to be 1230m long. Where as actually it was 1245m. What was the length of the chain at the end of the survey ? 7
- (a) Differentiate between the following : 7
- (i) Whole Circle Bearing and Reduced Bearing
- (ii) Contour lines and ground profile
- (b) Convert the following whole circle bearing to Reduce bearing. 7
- (i)  $36^{\circ}-15'$                       (ii)  $150^{\circ}-45'$
- (iii)  $235^{\circ}-17'$                       (iv)  $289^{\circ}-37'$

The following consecutive readings were taken with a level and a 4m levelling staff on a continuously rising ground at a commn interval of 30m : 14

3.016 on A, 1.579, 0.956, 3.844, 2.534, 1.689, 1.035, 0.962, 3.938, 3.644, 2.846, 1.953, 0.936, 0.585 on B.

The elevation of A was 512.155. Enter the above readings on a level book form and work out the R.L's of the stations and apply the usual checks. Also calculate the gradient of the tine AB.

5. What is three point problem ? Name the various methods of its solution. Which one will you select and why ? Explain the step wise procedure with neat sketches of its solution.
6. (a) Explain the following terms : 4x2  
(i) Transisting  
(ii) Face Left  
(iii) Face Right  
(iv) Changing Face  
(b) What are the temporary adjustments of a theodolite? Explain them briefly.
7. Write short notes on **any four** of the following : 4x3½=  
(a) Line Ranger  
(b) Isogonic Lines and Agonic Lines  
(c) Reciprocal Ranging  
(d) Temporary Adjustment of a Dumpy Level  
(e) Permanent adjustment of a Dumpy Level  
(f) Differential Leveling
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