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BET-023

DIPLOMA IN CIVIL ENGINEERING (DCLE(G)) DCLEVI

Term-End Examination

00338

June, 2014

BET-023 : ELEMENTS OF SURVEY

Time : 2 hours *Maximum Marks : 70*

Note : *Question no. 1 is* ***compulsory****. Attempt any* ***four*** *more questions out of the remaining questions. All questions carry equal marks.*

1. Select the most appropriate answer for each of the following multiple choice objective type questions. *7×2=14*

(a) Length of Engineer's chain is

(i) 100 ft

(ii) 60 ft

(iii) 33 ft

(iv) 20 m

(b) Least Count of prismatic compass is

(i) 1°

(ii) 30′

(iii) 45′

(iv) 30″

(c) The main principle of surveying is to work
   (i) from part to whole
   (ii) from whole to part
   (iii) from higher level to lower level
   (iv) from lower level to higher level

(d) Two contour lines having the same elevation
   (i) can cross each other
   (ii) cannot cross each other
   (iii) can unite together
   (iv) cannot unite together

(e) A fixed point of reference whose elevation is known is called
   (i) Reduced Level
   (ii) Bench Mark
   (iii) Change point
   (iv) Instrument station

(f) The R.L. of a Bench Mark is 100·0 m. The back sight is 1·215 m and the fore sight is 1·870 m. The R.L. of forward station is
   (i) 103·085 m
   (ii) 100·665 m
   (iii) 100·345 m
   (iv) 99·345 m

(g) The Plane Table survey is used for
   (i) Large Area
   (ii) Hilly Area
   (iii) Small Area
   (iv) Undulated Area

2. (a) Give the list of instruments used in chain surveying. 4

(b) A survey map is required to be drawn to a scale of 1/10,000. A 30 m chain was used which was found to be accurate at the commencement of the work while 20 cm too long at the closure. The area of the plot surveyed was found to be 90 cm^2 on map. Calculate the actual area of the plot in hectares. 10

3. (a) Define the following : 4

(i) Magnetic Declination

(ii) Magnetic Dip

(b) Find the included angle between the lines OA and OB in the following cases where the respective bearings are 5

(i) 37° – 10′ and 316° – 28′

(ii) 16° – 34′ and 139° – 43′

(c) Find the included angle between the lines AB and BC when the respective bearings are 157° – 14′ – 35″ and 16° – 10′ – 15″. 5

4. The following consecutive readings were taken along with a 4 m levelling staff on a continuously sloping ground at an interval of 20 meters :

0·345 on A, 1·450, 2·630, 3·875, 0·655, 1·745, 2·965, 3·945, 1·125, 2·475, 3·865 on B. The elevation of A was 60·350 m. Enter the above readings in a level book form and work out the R. L's if the stations. Also calculate the gradient of the line AB and apply the usual checks. 14

5. (a) What are the advantages and disadvantages of plane table survey ? 7

(b) Mention the various methods of plane table surveying and explain any one method with neat sketches. 7

6. Explain what is a deflection angle. Mention the stepwise procedure of measuring a deflection angle using a theodolite. 14

7. Write short notes on any ***four*** of the following :

$4 \times 3\frac{1}{2} = 14$

(i) Optical square

(ii) Cross staff

(iii) Reciprocal Levelling

(iv) Local attraction

(v) Offsets

(vi) Errors in Chain Survey