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BET-023

**DIPLOMA IN CIVIL ENGINEERING
DCLE(G) / DCLEVI
Term-End Examination
December, 2015**

BET-023 : ELEMENTS OF SURVEY

Time : 2 hours

Maximum Marks : 70

Note : *Question No. 1 is compulsory. Attempt any four more questions from the remaining. All questions carry equal marks.*

1. Select the most appropriate answer for each of the following questions :

$7 \times 2 = 14$

- (a) The following sights are taken on a turning point :
- (i) Fore sight only
 - (ii) Back sight only
 - (iii) Fore sight and Back sight
 - (iv) Fore sight and Intermediate sight

- (b) Geodetic survey is different from plane survey because of
- (i) undulations of the topography
 - (ii) coverage of very large area
 - (iii) the curvature of the Earth
 - (iv) the large difference of elevation between various points
- (c) The length of chain is measured from
- (i) centre of one handle to centre of other handle
 - (ii) outside of one handle to outside of other handle
 - (iii) outside of one handle to inside of other handle
 - (iv) inside of one handle to inside of other handle.
- (d) A fixed point of reference elevation is known as
- (i) Reduced level
 - (ii) Benchmark
 - (iii) Change Point
 - (iv) Instrument Station

- (e) If the plotted position of an instrument station is not known, the most accurate orientation of the plane table can be achieved by
- (i) Trough compass
 - (ii) Back sighting
 - (iii) Observation of two well-defined points
 - (iv) Observation of three well-defined points
- (f) The operation consisting of revolving the telescope through 180° in a vertical plane about its horizontal axis is called
- (i) Transiting
 - (ii) Face left
 - (iii) Face right
 - (iv) Traversing
- (g) The whole circle bearing of a line is 60° . Its quadrantal bearing is
- (i) N 60° E
 - (ii) E 60° N
 - (iii) S 60° W
 - (iv) W 60° S

2. Briefly discuss the following : 7+7=14

- (a) Purpose of surveying.
- (b) Classification of survey based on the instruments used.

3. (a) What is an offset ? Describe the 3 - 4 - 5 offset method.

- (b) A survey map is required to be drawn to a scale of $1/10,000$ RF. A 20 m chain was used which was found to be accurate at the commencement of work while 10 cm too long at the closure. The area of the plot surveyed was found to be 90 cm^2 on the map. Calculate the actual area of the plot. 6+8=14

4. (a) Define the following : 4×2=8

- (i) Angle of dip
- (ii) Magnetic Declination
- (iii) Local Attraction
- (iv) Magnetic Bearing

- (b) Explain the temporary adjustments of theodolite. 6

5. Describe Lehmann's Rule with the help of a neat sketch. 14

6. The following staff readings were observed with a level :

2.225, 1.605, 0.985, 2.090, 2.865, 1.260,
0.605, 1.985, 1.045, 2.685

the instrument having been moved after third, sixth and eighth readings. Enter the above readings in a page of a level book and calculate the R.L. of the above points, if the first reading was taken with a staff held on a Bench Mark of R.L. 412.385 m. 14

7. (a) What is the difference between a prismatic compass and a surveyor's compass ?
- (b) Explain with a neat sketch the construction and working of a cross staff. 7+7=14
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