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43(2) SRLV

2016

SURVEYING AND LEVELLING

Paper : Eng-2.6

Full Marks : 100

Time : Three hours

The figures in the margin indicate full marks for the questions.

1. (a) What do you mean by surveying ?
(b) What are the objectives of surveying ?
(c) What is its role in Architecture ?
 $5+5+5=15$
2. Explain the following terms (**Any ten**)
 $2 \times 10 = 20$
 - (i) Level surface
 - (ii) Mean sea level
 - (iii) Bench Mark

Contd.

- (iv) Horizontal Axis
- (v) Line of Collimation
- (vi) Intermediate sight
- (vii) Datum Surface
- (viii) Shrunk level
- (ix) Reduced level
- (x) Transiting
- (xi) Telescope Normal
- (xii) Change point.

3. Attempt the following : **(any two)**

5×2=10

- (i) A chain line ABC crosses a river, B and C being on the near and distant banks respectively. A line BD of length $100m$ is set out at right angles to chain line at B . If the bearing of BD and DC are $295^{\circ}0'$ and $65^{\circ}0'$ respectively, find the width of the river.

- (ii) An observer standing on the deck of a ship just sees a lighthouse. The top of the lighthouse is $42m$ above the sea level and the height of the observer's eye is $6m$ above the sea level. Find the distance of the observer from the lighthouse.
- (iii) The distance between two stations was $1200m$ when measured with a $20m$ chain. The same distance when measured with $30m$ chain was found to be $1195m$. If the $20m$ chain was $0.05m$ too long, what was the error in the $30m$ chain ?
4. Show the various parts of a theodolite through neatly drawn sketch. 5
5. Answer the following : **(any five)**
- (i) What is meant by chain surveying ? When does a chain survey preferred ? When does it become inconvenient ? $4+3+3=10$

(ii) What do you understand by plane table survey ? Explain the advantages and disadvantages of plane table surveying. $4+6=10$

(iii) What do you mean by true meridian and magnetic meridian ?

The magnetic bearing of a line AB is 120° . Find its true bearing if the direction of the magnetic north at A is (a) $9^\circ 15'$ west of true north, and (b) $5^\circ 30'$ east of true north.

$5+5=10$

3 (iv) What do you mean by levelling ? Describe the various types of levelling. $3+7=10$

(v) Define contour and discuss the characteristics of contours giving suitable sketches.

Differentiate between direct and indirect methods of contouring.

$6+4=10$

(vi) Describe the temporary adjustments to be done while setting up the theodolite.

Describe the method of repetition of measurement of horizontal angle by theodolite. $5+5=10$

(vii) What do you mean by contour interpolation? Describe the various methods of contour interpolation.

$4+6=10$