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43 (2) ARC 2-6

2017

**SURVEYING AND LEVELLING**

Paper : ENG 2-6

Full Marks : 100

Time : Three hours

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

I. Explain briefly : **(any five)** 2×5=10

- (a) Line of Collimation
- (b) Mean Sea Level
- (c) Bench Mark
- (d) Swinging of Telescope
- (e) Level Surface
- (f) Transiting.

Contd.

II. Answer the following : **(any three)**

5×3=15

- (a) What is the role of surveying in architecture?
- (b) What are the objectives of surveying?
- (c) What is shrunk scale and how to calculate it?
- (d) Show the various parts of a theodolite through neatly drawn sketch.

III. What do you mean by contour and contouring? Discuss the various characteristics of contours giving suitable sketches.

5+10=15

IV. (a) Discuss temporary adjustments of a theodolite.

10

**Or**

(b) Discuss measurement of Angles by a theodolite.

V. Attempt the following : **(any one)**  $5 \times 1 = 5$

(a) 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.

(b) 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?

VI. A straight line is measured with a steel tape. What corrections will you apply to the measured length of the line to know its correct length? 5

VII. Answer the following : **(any four)**  $10 \times 4 = 40$

(a) 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.

- (b) Explain the different methods of Plane Tabling survey.
- (c) Explain Orienting the table during Plane Table survey.
- (d) Elaborate classification of levelling.
- (e) What are the instruments used in chain surveying? How is the chain survey executed in the field?