GS-6486

(3 Hours)   [Total Marks : 100

N. B. : (1) Question No. **1** is **compulsory.**
      (2) Assume any data, if **required** and state the same **clearly.**
      (3) Attempt any **four** questions out of remaining **six** questions.
      (4) Illustrate answers with neat **sketches** wherever **rquired.**
      (5) **Figures** to the **right** indicate **full** marks.
      (6) Use legible **handwriting.**

1. Attempt any **four** :—
      (a) Compare Plane Surveying and Geodetic Surveying.   5
      (b) Write short note on Sensitiveness of Bubble.   5
      (c) Advantages and disadvantages of plane table survey.   5
      (d) Compare Sumeyor's Compass and Prismatic Compass.   5
      (e) Compare W. C. B. and R. B. system.   5

2. (a) Sketch symbols and used in surveying :—   5
          (i) Embankment
          (ii) Cutting
          (iii) Railway Bridge
          (iv) Culvert
          (v) Wire fencing.
      (b) (i) Convert the following bearings in R. B :—   3
             (1) 270°   (2) 330°   (3) 180°
         (ii) Convert the following bearings in W.C.B. :—   3
             (1) N 45° E   (2) S 40° W   (3) S 60° 40' 20" E.
      (c) The following bearings were taken in traversing with a compass. At what stations   9
      do you suspect local attraction ? Determine the correct front bearings and back
      bearings of the lines.

Line	F·B·	B·B·
AB	S 45° 30' E	N 45° 30' W
BC	S 60° 0' E	B 60° 40' W
CD	S 5° 30' E	N 60° 40' W
DA	N 83° 30' W	S 85° 30' E

3. (a) An observer standing on the deck of ship just sees the house. The top of light   5
      house is 30 m above the sea level and the height of observer's eye is 14 m above
      the sea level. Find the distance of the observer from light house.
      (b) Compare Direct and Indirect method of Contouring.   4

[TURN OVER

(c) It was required to ascertain the elevations of two points A and B, a line of levels was **11** run from A to B. The levelling was then continued to B. M. of elevation 100 m. The readings obtained are shown. Obtain R-L's of A and B. Use any method. Apply usual checks.

Sr. No.	B·S·	I·S·	F·S·	R·L·	Remarks
1	3·90				A
2	1·450		3·96		
3	3·95		2·14		
4		2·35			B
5	3·35		0·85		
6	3·50		2·95		
7	3·90		3·10		
8			2·50	100	BM

4. (a) Calculate the length of CD and the bearing of line AB from the following **10** observations :—

Line	Bearing	Length (m)
AB	Roughly East	150
BC	178° 0'	75·50
CD	270°	not obtained
DA	1° 0'	63·00

(b) Explain in detail various methods of plane table surveying. **10**

5. (a) Write an exhaustive note on permanent adjustments of transit. **8**

(b) Define Contour, Contour Gradient, Horizontal Equivalent and state various **8** applications of contour map in Civil Engineering.

(c) Write short notes on :— **4**

  Bowditch's Rule and Transit Rule.

6. (a) Explain volume calculation by spot levels.   **6**

    (b) Explain in detail, the various difficulties encountered during the levelling.   **8**

    (c) A survey line PQ intersects a hillock. In order to extend the line beyond the obstacle   **6**
a perpendicular QR, 100 m long is set out at Q. From 'R' two lines RS and RT
are set out at angles 45° and 60° with RQ respectively. Find the lengths RS and
RT such that the points S and T may lie on the prolongation of Line PQ and also
find the obstructed distance QS.

7.   Write short notes on any **four** :—   **20**

    (a) Spire Test

    (b) Reciprocal Levelling

    (c) Horizontal angle measurement by method of Reiteration

    (d) Planimeter and precautions in its use.

    (e) Comparison of Trapezoidal Rule and Simpson's Rule.