R13

SURVEYING – I
(Civil Engineering)

Time: 3 hours

Max. Marks: 70

PART – A
(Compulsory Question)
*****

1 Answer the following: (10 X 02 = 20 Marks)
- (a) Explain the term Discrepancy.
- (b) Explain the principle on which chain survey is based.
- (c) Define the term Local attraction.
- (d) List out the advantage and disadvantage of plane tabling.
- (e) What are the different types of levelling staff?
- (f) What is grade contour?
- (g) Define transit theodolite.
- (h) What is meant by closing error?
- (i) State Simpson's one third rule.
- (j) Define Prismoid.

PART – B
(Answer all five units, 5 X 10 = 50 Marks)

UNIT – I

2 Briefly explain the duties of a surveyor.

OR

3 Explain in detail the obstacles in chain surveying with neat sketches.

UNIT – II

4 Explain with the help of neat sketch, the graduations of a prismatic compass along with adjustment of prismatic compass.

OR

5 Explain with sketches, the following methods of locating a point by plane table survey. Also discuss the relative merits and application of the following methods:
- (a) Traversing.
- (b) Resection.

UNIT – III

6 (a) Explain different methods of levelling in detail.
  (b) The following notes refer to reciprocal levels taken with one level:

Inst. at	staff reading on		Remarks
	P	Q	
P	1.824	2.748	Distance between P & Q = 1010m
Q	0.928	1.606	R.L of P = 126.386

Find: (i) true R.L. of Q. (ii) The combined correction for curvature and refraction. (iii) The angular error in the collimator adjustment of the instrument. What will be the difference in answer of (i) and (iii) if observed staff readings were 2.748 on P & 1.824 on Q, the instrument being at P; and 1.606 on P & 0.928 on Q, the instrument being at Q.

OR

7 Describe various methods of locating contours by indirect methods & discuss the merits and demerits of each.

UNIT – IV

8   State what errors are eliminated by repetition method. How will you set out a horizontal angle by method of repetition.

OR

9   Describe Fast needle method of theodolite traversing.

UNIT – V

10   The following perpendicular offsets were taken from a chain line to a hedge:

Chainage (m)	0	15	30	45	60	70	80	100	120	140
Offsets (m)	7.6	8.5	10.7	12.8	10.6	9.5	8.3	7.9	6.4	4.4

Calculate the area between the survey line, the hedge and the end offsets by:
   (i) Trapezoidal rule. (ii) Simpson's rule.

Calculate the volume of the excavation shown in figure. The side slopes being 1 ½ horizontal to 1 vertical, and the original ground surface sloping at 1 in 10 in the direction of the centre line of the excavation.
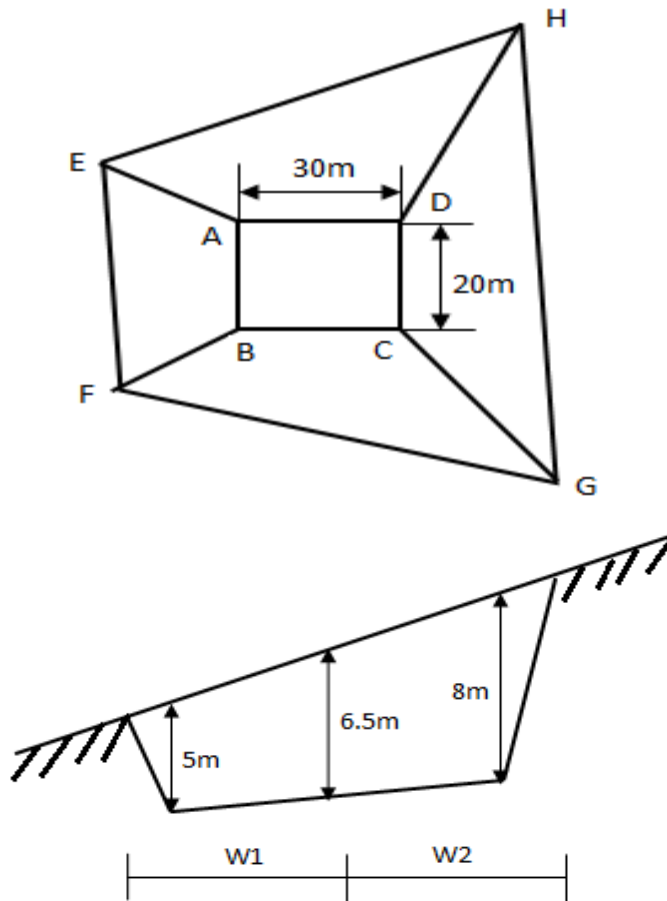
OR

11 (a) Explain the box sextant in detail. Also explain how to measure horizontal & vertical angle with box sextan.

   (b) Explain the permanent adjustment of a box sextant in detail.

*****