## P. Pages: 2

Time : Three Hours

## Notes : 1. All questions carry equal marks.

- 2. Answer all questions.
- 3. Due credit will be given to neatness and adequate dimensions.
- 4. Assume suitable data wherever necessary.
- 5. Illustrate your answers wherever necessary with the help of neat sketches.
- 6. Non programmable calculator is permitted.
- **1.** a) Explain in details the basic principle of surveying.
  - b) The following fore and back bearing were observed in traversing with a compass in place. 12
     Where local attraction was suspended.

Line	AB	BC	CD	DE
F. B.	38° 30′	100° 45′	25° 45′	325° 15′
B. B.	219° 15′	278° 30'	207° 15′	145° 15′

Find the corrected fore and back bearing and the true bearing of each of the lines given that the magnetic declination was 10°w.

## OR

**2.** a) The following bearings were observed in running a closed traverse.

Line	AB	BC	CD	DE	EA
F. B.	71° 5′	110° 20′	161° 35′	220° 50′	300° 50′
B. B.	250° 20′	292° 35′	341° 45′	40° 05′	121° 10′

Determine the correct magnetic bearings of the lines.

- b) Explain in brief-Errors in compass Survey.
- **3.** a) Explain Reciprocal levelling.
  - b) What is Barometric levelling with neat sketch with suitable example.

## OR

**4.** In running fly levels from a bench mark of R.L-183.215, the following readings were **16** obtained.

B. S.	1.215	2.035	1.980	2.625
F. S.	0.965	3.830	0.980	

From the last position of the instrument, five pegs at 20 meters intervals are to be set out on a uniform rising gradient of 1 in 40; the first peg is to have a R.L. of 181.580. Work out the staff readings for setting the tops of the pegs on the given gradient.

GUG/W/16/3876

Max. Marks: 80

12

4

4 8

8

5.	a)	Explain how you will measure vertical angle by a theodolite.	5
	b)	Explain 'Double face observations' What advantages are associated with them?	5
	c)	Explain the steps involved in Gale's traverse table.	6
		OR	

6. The following records are obtained in a traverse survey where the length and bearing of a 16 line DA were not recorded.

Line	Length (M)	Bearing
AB	75.50	30° 24′
BC	180.50	110° 36′
CD	60.25	210° 30′
DA	?	?

6

5

5

8

7

9

Compute the length and bearing of line DA.

- 7. a) Write short notes on 'Interpolation of contours'.
  - b) Explain factors affecting contour Intervals.
  - c) What is subtense bar?

OR

8. a) The area within the contour line at the site of reservoir and face of the proposed dam are as follows.

Contour	101	102	103	104	105	106	107	108	109
Area (m <sup>2</sup> )	1000	12,800	95,200	1,47,600	8,72,500	13,50,000	19,85,000	22,86,000	25,12,000

taking 101 as the bottom level of the reservoir and 109 as the top level, calculate the capacity of the reservoir.

- b) Draw a neat sketch of Planimeter and explain it.
- **9.** a) What are the different types of curves.
  - b) Derive a relation between radius and degree of curve.

OR

a) What is EDM.
b) Derive an expression for super elevation for Road and railways.
c) Draw a Abney level and label its parts.
5

\*\*\*\*\*\*