

- NB: (1) Q. No 1 is compulsory.  
 (2) Attempt any **three** questions out of the remaining questions  
 (3) Assume suitable data wherever it is required and state the same clearly  
 (4) Figures to the right indicate full marks.

1. Describe the following with neat sketches :- (Any four)

20

- (i) Principle of leveling
- (ii) Characteristics of contours
- (iii) Clip screw
- (iv) Chain and cross staff surveying
- (v) Balancing of sights
- (vi) Repetition method

2. (a) Write an exhaustive note on chain and tape corrections

8

(b) In a chain and compass traversing following bearings are observed

12

Line	FB	BB
PQ	S43°15'W	N44°15'E
QR	N73°00'W	S72°15'E
RS	N12°45'E	S13°15'W
ST	N60°00'E	S59°15'W
TP	S37°30'E	N37°30'W

Compute :-

- (i) The included angles
- (ii) The correct magnetic bearings
- (iii) The true bearings if magnetic declination is 02°40' W

3. (a) What is a planimeter? Explain its construction and working with suitable example?

5

(b) Explain the measurement of volume from spot levels

5

(c) Calculate the area enclosed between the chain line, end offsets and irregular boundary line by the coordinate method.

10

CH (m)	0	5.5	12.7	25.5	40.5
O (m)	4.20	5.20	4.75	6.50	5.25

4. (a) Describe the permanent adjustments of a level?

8

(b) In running fly levels from a BM of RL 150.000m the following readings are obtained.

12

BS -	1.315	2.035	1.980	2.625
FS -	1.150	3.450	2.255	

From the last position of the instrument, five pegs at 20m interval are to be set out at an uniform gradient of +1 in 40. The first peg is to have RL of 247.245m. Work out the staff readings required for setting the tops of the pegs on the given gradient.

[TURN OVER]

- 5. (a) State and explain the various miscellaneous uses of a transit? 8
- (b) 12

Line	Length (m)	W.C.B
PQ	67	290°00'
QR	81	183°45'
RS	42	162°15'
ST	38	112°00'
TP	116	10°30'

Balance the above theodolite traverse by Bowditch's rule

- 6. Write notes on :- (Any four) 20
  - (a) Types of surveying
  - (b) Contour Gradient
  - (c) Methods in PTS
  - (d) Precise leveling
  - (e) GTT

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