

OR

- X a) What is an anallatic lens? How the constant additive factor of a tacheometer can be made zero by using an anallatic lens? (7)
- b) Explain the term Tangential Tacheometry. (5)
- c) Describe the procedure of measuring a horizontal angle by reiteration method. (8)

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BTS-C 024(B)

**B.Tech. Degree III Semester Examination**  
**January 2002**

CE 302 SURVEYING-I

Time: 3 Hours

Max. Marks: 100

(Answer all questions)

- I a) Explain the difference between plane and geodetic surveying. (7)
- b) Explain the principles of chain surveying. (7)
- c) The length of a line measured with a 20m chain was found to be 562 metres. The true length of the line was known to be 560 metres. Find the error in the chain. (6)

OR

- II a) Describe with sketches, the various methods of chaining on sloping ground stating the advantages of each. (10)
- b) In passing an obstacle in the form of a pond, stations A and D, on the main line, were taken on the opposite sides of the pond. On the left of AD, a line AB, 225m long was laid down, and a second line AC, 275m long was ranged on the right of AD. The points B, D and C being in the same straight line. BD and DC were then chained and found to be 125m and 137.5m respectively. Find the length of AD. (10)
- III a) Describe the Bowditch graphical method of distributing the closing error in a compass traverse. (8)

(P.T.O)

II b) The following bearings were observed in running a closed traverse:

Line	Forebearing	Backbearing
AB	75°5'	254°20'
BC	115°20'	296°35'
CD	165°35'	345°35'
DE	224°50'	44°5'
EA	304°50'	125°5'

At what stations do you suspect the local attraction? Determine the correct magnetic bearings. If declination was 5°10' E, what are the true bearings? (12)

OR

IV a) State the three point problem and explain how it can be solved by trial and error. How can the trials be made convergent by using Lehmann's rules? (10)

b) What are the advantages and disadvantages of plane table surveying? (10)

V a) How do curvature and refraction affect levelling operations? (6)

b) Describe with sketches, the process of reciprocal levelling. (6)

c) Reciprocal levels are taken with one level as below:-

Level at	Reading on		Distance between A and B
	A	B	
A	4.50	6.76	2640m
B	3.15	4.97	

Determine (a) the true difference of level between A and B and (b) the collimation error of the instrument. (8)

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VI a) **OR**  
What are the characteristics of contour? Explain clearly with diagrams. (10)

b) Describe various methods of contouring. Discuss the merits and demerits of each. (10)

VII a) Explain the process of calculating area from (i) latitude & departure (ii) co-ordinates. (8)

b) A series of offsets were taken from a chain line to a curved boundary line at intervals of 10m in the following order.

0, 2.50, 3.55, 3.40, 4.65, 3.60, 4.85, 5.80m.

Compute the area between the chain line, the curved boundary line and the end offsets by using Trapezoidal rule and compare the results with the Simpson's rule. (12)

OR

Write short notes on:

- (i) Hand levels
- (ii) Mass haul curve
- (iii) Clinometer
- (iv) Planimeter
- (v) Eidograph (20)

IX a) Describe the methods of traversing by theodolite and discuss their advantages and disadvantages. (8)

b) For a closed traverse ABCDE the length and bearings of the lines are given below:

Line	Length(m)	Bearing
AB	362.55	N 33° 10' W
BC	218.00	N 39° 08' E
CD	163.22	S 10° 20' E
DE	195.95	S 66° 50' E
EA	278.53	S 32° 20' W

Compute the latitudes, departures and closing error. Apply Bowditch's correction and compute the adjusted length and bearing of each line. (12)

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