

IX. (b) Calculate the deflection angle from the following observation.

Line	Bearing
AB	N 45° 30' E
BC	N 60° 45' E
CD	S 85° 50' E
DE	S 40° 30' W

OR

- X. (a) Explain the method to calculate the Tacheometric constants.
- (b) Differentiate between Stadia tacheometry and tangential tacheometry.
- (c) What is the use of a subtense bar?

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**B.Tech. Degree III Semester (Lateral Entry)  
Examination, April 2003**

**CE 302 SURVEYING - I**

Time: 3 Hours

Maximum Marks: 100

(All questions carry **EQUAL** marks)

- I. (a) What are the basic principles of surveying?
- (b) Explain indirect ranging.
- (c) The plan of an old survey plotted to a scale of 50m to 1cm was found to have shrunk so that a line originally 20cm long was 19.6cm. There was also a note on the plan that the 20m chain used was 0.1m too long. If the area of the plan measured now by a planimeter is 150.28cm<sup>2</sup>, find the true area of the survey.
- OR
- II. (a) Differentiate between plane surveying and Geodetic surveying. What are the basic characteristics of each?
- (b) What is meant by scale of a map? What are the recommended scales for -
- (i) Building surveys
  - (ii) Route surveys and
  - (iii) Land surveys?
- (c) A surveyor measured the distance between two points on a plan and computed the length as 500m by adopting a scale of 1cm = 40m. Later it was found that the correct scale of the plan was 1cm = 50m. Find the true distance between the points.
- III. (a) Differentiate between -
- (i) true bearing and magnetic bearing;
  - (ii) whole circle bearing and quadrantal bearing.

(Turn over)

- III. (b) What is declination? What are different types of variations in declination?
- (c) The following bearings were observed in a traverse survey conducted with a prismatic compass at a place where local attraction was suspected:

Line	FB	BB
AB	124°30'	304°30'
BC	68°15'	246°00'
CD	310°30'	135°15'
DE	200°15'	17°45'

Which are the stations affected by local attraction? Find the corrected bearings of the lines also.

OR

- IV. (a) What is a Telescopic alidade? When is it used?
- (b) List the various methods used for orienting the plane table and explain any one in detail.
- (c) What is meant by three-point problem in plane table surveying? Explain the method of solving it.

V (a) Define the terms:

- (i) Line of collimation
- (ii) Height of instrument
- (iii) Level surface
- (iv) Rise and fall.

(b) What are the temporary adjustment of levelling? Explain.

Contd.....3.

- (c) The following staff readings were taken using a dumpy level. The instrument was shifted after 5<sup>th</sup>, 7<sup>th</sup> and 10<sup>th</sup> readings. R.L. of the starting bench mark is 100.000. Enter the readings in the form of a level book page; reduce the levels by rise and fall method and apply the usual checks.

8.5  
1.525, 2.200, 3.120, 2.500, 3.670, 1.230, 2.765, 2.850, 3.260, 3.725, 1.890, 2.910.

OR

- VI. (a) Explain the terms (i) contour (ii) contour interval and (iii) contour gradient.
- (b) Describe the merits and demerits of different methods of locating contours.
- (c) Explain clearly with diagrams the characteristics of contours.

VII. (a) What is Trapezoidal rule? Derive an equation for the same.

- (b) A series of offsets were taken at 10m intervals in the following order for a chain line to a curved boundary 0, 6.2, 4.8, 5.6, 6.5, 7.3, 8.5, 0 m. Find the area between the chain line, the curved boundary and the offsets by trapezoidal rule.

OR

VIII. Write short notes on:

- (i) Clinometer
- (ii) Ceylon Ghat tracer
- (iii) Box sextant.

IX. (a) What are the temporary and permanent adjustments of Theodolite? Explain.

Contd.....4.