

Enrollment No: \_\_\_\_\_ Exam Seat No: \_\_\_\_\_

# C.U.SHAH UNIVERSITY

## Summer Examination-2017

Subject Name : Surveying-I

Subject Code : 4TE03SUR1

Branch : B. Tech. Civil

Semester : 3

Date : 29/03/2017

Time : 10:30 To 01:30

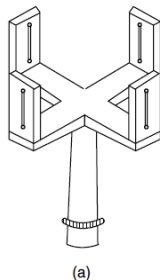
Marks : 70

Instructions:

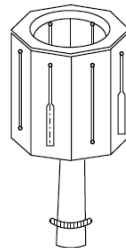
- (1) Use of Programmable calculator & any other electronic instrument is prohibited.
- (2) Instructions written on main answer book are strictly to be obeyed.
- (3) Draw neat diagrams and figures (if necessary) at right places.
- (4) Assume suitable data if needed.

**Q-1 Attempt the following questions: (14)**

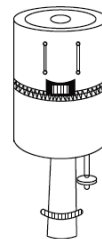
- a) What is a Line ranger? 01
- b) Distinguish between Absolute length and Nominal length of chain. 01
- c) Name the instruments commonly employed in chain survey for setting right angle to a chain line. 01
- d) What is Revenue chain? 01
- e) What is the slope correction for a length of 30 m along a gradient of 1 in 20? 01
- f) Define: Change point. 01
- g) Name the instruments shown in figure. 01



(a)



(b)



(c)

- h) Enlist various methods of resection. 01
- i) What is transiting? 01
- j) Define: Departure. 01
- k) What are the advantages of repetition method to measure horizontal angle? 01
- l) What is the error, if the difference between face left and face right observations of a theodolite is 3'? 01
- m) Which one is the most accurate method of orientation by the three-point method of plane tabling? 01
- n) A mosque is situated on the far side of a river and is inaccessible. It can be located by ..... 01

**Attempt any four questions from Q-2 to Q-8**

**Q-2 Attempt all questions (14)**

- (a) What are the merits and demerits of plane table surveying? 05



- (b) What is dip? How does it affect bearing measurement? How the correct bearing may be taken avoiding the defect due to dip? 05
- (c) Calculate the error due to curvature of earth in the measurement if the distance measurement is limited to 100 km. 04
- Q-3 Attempt all questions (14)**
- (a) Define the following terms related with the contouring: 05  
(1) Contour map, (2) Contour line, (3) Contour interval, (4) Horizontal equivalent, (5) Contour gradient.
- (b) Explain the following: (a) What is the purpose of loosening wing nuts of a theodolite tripod during transit? 05  
(b) When and why are angles measured by repetition?
- (c) In a traverse the latitude and departures of the sides were calculated and it was observed that  $\Sigma$  latitude = 1.39 and  $\Sigma$  departure = - 2.17. Calculate the length and bearing of the closing error. 04
- Q-4 Attempt all questions (14)**
- (a) Draw a neat sketch of theodolite and show its components. 05
- (b) Explain principles and uses of planimeter. 05
- (c) A chain was tested before starting a survey and was found to be exactly 20 m long. At the end of the survey it was tested again and was found to measure 20 m and 20 cm. The area of the plan drawn to scale 8 m to 1 cm was 220 sq.cm. Find the true area of the field. 04
- Q-5 Attempt all questions (14)**
- (a) What is Reciprocal ranging? How the ranging of a line is accomplished across a rising ground and valley? 07
- (b) The bearings observed in traversing with a compass at a place where local attraction was suspected are given below: 07
- | Line | Fore Bearing | Back Bearing |
|------|--------------|--------------|
| AB   | S 45° 30' E  | N 45° 30' W  |
| BC   | S 60° 00' E  | N 60° 40' W  |
| CD   | N 03° 20' E  | S 05° 30' W  |
| DA   | S 85° 00' W  | N 83° 30' E  |
- At what stations do you suspect local attraction? Find the corrected bearings of the lines.
- Q-6 Attempt all questions (14)**
- (a) What is closing error? Why such errors need adjustment? Give the sequence of graphical adjustment of closing error. What are the sources of such errors? 07
- (b) The following consecutive readings were taken with a level and a 4.0 m staff on a continuously sloping ground at a common interval of 30 m: 0.780, 1.535, 1.955, 2.430, 2.985, 3.480, 1.155, 1.960, 2.365, 3.640, 0.935, 1.045, 1.630 and 2.545. The reduced level of the first point A was 180.750m. Calculate the reduced levels of the points by the H.I. system or rise and fall system. Also calculate the gradient of the line joining the first and the last points. 07
- Q-7 Attempt all questions (14)**
- (a) Describe the method of orienting plane table by back sighting. 07
- (b) From the following observations on the traverse ABCD calculate the length and bearing of the line AB. 07



Line	Bearing	Length (m)
CA	250° 45'	66.25
CD	15° 20'	330.20
DB	270° 15'	150.00

- Q-8**      **Attempt all questions**      **(14)**
- (a) Explain step by step procedure to measure horizontal angle with reiteration method.      07
- (b) Explain with sketches, the radiation method of locating a point by plane table survey.      07

