

Enrollment No: _____ Exam Seat No: _____

C.U.SHAH UNIVERSITY

Summer Examination-2018

Subject Name: Surveying-I

Subject Code: 4TE03SUR1 **Branch:** B.Tech. (Civil)

Semester: 3 **Date:** 28/03/2018 **Time:** 02:30 To 05:30 **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) Give the representative fraction of a line 135 metres long represented by 22.5 cm on plan. **01**
 - b) Enlist characteristics of good scale. **01**
 - c) What is main use of cross-staff? **01**
 - d) Draw conventional signs used in surveying for: River and Oil well. **01**
 - e) Define Quadrant Bearing [QB]. **01**
 - f) Define prismatic compass. **01**
 - g) What is back bearing? **01**
 - h) Define Fore Sight reading [FS]. **01**
 - i) Draw contour for plateau. **01**
 - j) Define: Sensitiveness of bubble tube. **01**
 - k) If the departure and latitude of a line are + 78.0 m and – 135.1 m, respectively, the length of the line is _____. **01**
 - l) What is ranging? **01**
 - m) Enlist the various accessories of a plane table. **01**
 - n) Write the statement of two-point problem. **01**

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

- Q-2 Attempt all questions (14)**
- (a) Define surveying. What are the objects and uses of surveying? **05**
 - (b) The area of the plan of an old map plotted to a scale of 10 meters to 1 cm measures now as 100.2 sq cm as measured by a planimeter. The plan is found to have shrunk so that a line originally 10 cm long now measures 9.7 cm only. Further the 20 m chain used is 8 cm too short. Find the true area of the survey. **05**
 - (c) Differentiate between Whole Circle Bearing (WCB) and Reduced Bearing (RB). **04**

- Q-3 Attempt all questions (14)**
- (a) Explain with neat sketch the procedure for indirect ranging (Reciprocal Ranging). **05**
 - (b) The length of a chain line when measured with a 20 m chain was found to be 1432 m. But when a 30 m chain which was 0.65 m too short was used for the purpose, the line was found to be 1445 m long. Find the error in 20 **05**



m chain?

- (c) Differentiate between height of instrument method and rise and fall method. **04**

Q-4 Attempt all questions (14)

- (a) State and explain temporary adjustments of a dumpy level. **05**
(b) Explain principles and uses of abney level. **05**
(c) Total latitude of a station point A is 400.20 m and that of the station point B is 323.80 m. Their respective total departures are 190.00 m and - 103.20 m. Calculate the length AB and its bearing. **04**

Q-5 Attempt all questions (14)

- (a) What is closing error in a compass traverse? Describe graphical adjustment of closing error by Bowditch's rule. **07**
(b) Explain with neat sketch, the construction of a diagonal scale. Draw a diagonal scale of 1 cm = 2 m to measure up to a metres and decimetres and represent 34.7 m on the scale. **07**

Q-6 Attempt all questions (14)

- (a) Explain step by step procedure to measure horizontal angle with repetition method by theodolite. **07**
(b) In a closed traverse, the following bearings were observed, with a compass. Calculate their interior angles and then compute the corrected magnetic bearings by the method of correction to local attraction. **07**

LINE	FB	BB
AB	46° 30'	226° 30'
BC	118° 30'	300° 15'
CD	210° 00'	28° 00'
DE	271° 15'	93° 15'
EA	313° 45'	132° 00'

Q-7 Attempt all questions (14)

- (a) Define three-point problem and show how it may be solved by tracing paper method. **07**
(b) The following consecutive readings were taken with a level on continuously sloping ground at a common interval of 20 m. The last station has an elevation of 155.272 m. Rule out a page of level book and enters the readings. Calculate (i) The reduced levels of the points by rise and fall method, and (ii) The gradient of the line joining the first and last points. 0.420, 1.115, 2.265, 2.900, 3.615, 0.535, 1.470, 2.815, 3.505, 4.445, 0.605, 1.925, 2.885. **07**

Q-8 Attempt all questions (14)

- (a) In a closed traverse ABCDEA, the lengths of the lines DE and EA could not be measured due to an obstruction. Determine the lengths from the following data. **07**

Line	Length (m)	Bearing
AB	481	98° 30'
BC	624	31° 00'
CD	469	301° 40'



DE	?	235° 30'
EA	?	153° 00'

- (b) Explain with sketches, the intersection method of locating a point by plane table survey. **07**

