**Registration No:** | | | | | | | | | | |

**Total Number of Pages: 02** **B.Tech.**
**PCI3I102**

**3rd Semester Regular/Back Examination 2017-18**
**SURVEY**
**BRANCH: CIVIL**
**Time: 3 Hours**
**Max Marks: 100**
**Q.CODE: B985**

**Answer Question No.1 and 2 which are compulsory and any four from the rest.**
**The figures in the right hand margin indicate marks.**

**Q1** **Answer the following questions:** **(2 x 10)**

**a)** Least count of 30 m chain is ____ and 20m chain is _____.
**b)** The line of collimation method of reduction of levels, does not provide a check on _____.
**c)** The process of setting up a theodolite on a ground station is called _____. The axis about which telescope along with vertical circle rotates in vertical plane is called _____ axis.
**d)** The smaller horizontal angle between the true meridian and a survey line, is known _____. The vertical angle between longitudinal axis of a freely suspended magnetic needle and a horizontal line at its pivot, is known _____
**e)** The point or the surface with respect to which levels of other points or planes are calculated is called _____. The levels of various points taken as height above the datum surface are called_____.
**f)** The length of a traverse leg may be obtained by multiplying the _____ and _____ of its reduced bearing.
**g)** Bowditch rule is applied to a _____ traverse for adjustment of _____ error.
**h)** _____and _____ data are stored in computers and interlinked in GIS.
**i)** Based on sources of Electromagnetic energy used Remote Sensing is Classified as _____ and _____
**j)** The sensitiveness of a level tube decreases if both _____ and _____ are increased

**Q2** **Answer the following questions: *Short answer type*** **(2 x 10)**

**a)** List the factors for selection of base lines.
**b)** Define the terms: (i) Reduced Level (ii) Benchmark
**c)** What do you mean by *closing error* in a traverse?
**d)** Draw the figure showing the contours for an overhanging cliff.
**e)** What is well conditional triangle? Why is it necessary to use well- conditioned triangle?
**f)** What is meant by sensitivity of a bubble tube?
**g)** The area of a certain field was measured with a 30 m chain and found to be 5000 sq. m. After the work it was found that the chain was 10 cm too short. What is the true area of the field?
**h)** What are 'face left' and 'face right' observations? Why is it necessary to take both face observation?
**i)** List three fundamental quantities measured using Total Station.
**j)** Write the arithmetic check in reduction of level by rise and fall method.

**Q3** **a)** A nominal distance of 30m was set out with an 30m steel tape from a mark on the top of one peg to a mark on top of another, the tape being in catering under a **(10)**

pull of 10kg at a mean temperature of 70°F. The top of one peg was 0.25m below the top of another. The top of higher peg was 460 meters above mean sea level. Calculate the exact horizontal distance between the marks on the two pegs and reduce it to mean sea level, if the tape was standardised at a temperature of 60°F, in catering, under a pull of (a)8 kg, (b)12 kg, (c) 10kg.

**b)** Explain the different method of chaining on sloping ground. What is hypotenusal allowance? **(5)**

**Q4 a)** The following consecutive readings were taken with a level and 5meter levelling staff on continuously sloping ground at a common interval of 20meters: 0.385; 1.030; 1.925; 2.825; 3.730; 4.685; 0.625; 2.005; 3.110; 4.485. The reduced level of first point was 208.125m. Rule out a page of a level field book and enter the above readings. Calculate the reduced levels of the point by rise and fall method and also the gradient of the line joining first and last point. **(10)**

**b)** Describe briefly the temporary adjustment of a Dumpy Level. **(5)**

**Q5 a)** The following are the bearings of a closed traverse using a prismatic compass. Compute the included angles and the deflection angles. Is there any error in the measurement of angles. **(10)**

| Line | AB | BC | CD | DE | EF | FA |
|---|---|---|---|---|---|---|
| Bearing | $37^0$ 30’ | $92^0$ 00 | $151^0$ 30’ | $220^0$ 15’ | $283^0$ 15’ | $330^0$ 15’ |

**b)** A survey line PQ intersects a high building. To prolong the line past the building, a perpendicular QA, 100m long, is set out at Q. From A, two lines AB and AC are set out at angle 45° and 60° respectively with AQ using the chain only. Determine AB and AC such that B and C lie on the prolongation of PQ. Also determine the obstructed distance QB. **(5)**

**Q6 a)** The following observations were taken in reciprocal levelling: **(10)**

| Instrument at | Staff Reading | | Remarks |
|---|---|---|---|
| | A | B | |
| A | 1.545 | 2.565 | Distance AB= 1420m |
| B | 0.725 | 1.935 | RL of A =108.360 |

Find (i) RL of B
(ii) the combined correction for curvature and refraction
(iii) the angular error for collimation adjustment for the instrument.

**b)** The reading taken on a staff 100m from the instrument with bubble central was 1.872m. The bubble is then moved 5 divisions out of the centre, and the staff reading is observed to be 1.906m. Find the angular value of one division of the bubble, and the radius of the curvature of the bubble tube. The length of one division of the bubble is 2mm. **(5)**

**Q7 a)** Describe various methods of contouring. Discuss the merits and demerits of each. **(10)**

**b)** Describe with the help of sketches the characteristics of contours. **(5)**

**Q8 a)** Explain how you would measure Horizontal angle by repetition and vertical angle with a theodolite. **(10)**

**b)** Explain the temporary adjustment of transit theodolite. **(5)**

**Q9 a)** Briefly explain the components of GIS. **(10)**
Write short note on Geodimeter with schematic diagram.

**b)** To find the level difference between Station A and target point B, following observations were recorded with a total station: **(5)**
Slope distance =486.228m
Zenith angle =86°28´42´´
Height of Instrument = 1.602m
Height of reflector at B =1.836m.
If RL of A is 100m; find RL of B.