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Total Number of Pages : 02

Course: B.Tech  
Sub\_Code: RCI4C001

4<sup>th</sup> Semester Regular/ Back Examination: 2022-23

SUBJECT: Surveying

BRANCH(S): C&EE, CIVIL

Time : 3 Hour

Max Marks : 100

Q.Code : M226

Answer Question No.1 (Part-1) which is compulsory, any eight from Part-II and any two from Part-III.

The figures in the right hand margin indicate marks.

**Part-I**

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

- Explain the term normal tension in chain surveying.
- What is the fundamental difference between surveying and levelling?
- Define the terms intermediate sight and back sight in levelling.
- What is the difference between a level surface and a horizontal surface?
- Define the term sensitiveness of a level tube.
- What is the horizontal equivalent in contouring?
- Write the function of the tangent screws of a theodolite.
- Define remote sensing.
- What is radar, and how it works?
- What is Electronic Distance Measurement (EDM), and how does it differ from traditional distance measurement methods in surveying?

**Part-II**

**Q2 Only Focused-Short Answer Type Questions- (Answer Any Eight out of Twelve) (6 x 8)**

- Two stations A and B are not intervisible due to rising ground between them. Explain with a sketch how the line AB can be ranged if both the stations are visible from intermediate points.
- Explain how to apply the corrections in measured length in chain survey for the change temperature, sag, and incorrect alignment.
- What are the obstacles which may be encountered during a chain survey?
- What is the closing error? Describe a method to eliminate this error.
- Explain how the reciprocal levelling eliminates the error due to curvature and refraction.
- Explain the temporary adjustments of a dumpy level.
- Explain the differences between the height of collimation method and the rise and fall method of reduction of levels.
- Describe the indirect method of locating contour using cross-sections.
- List the fundamental lines of a theodolite and explain the desired relationships between these lines.
- Describe the reiteration method of measuring horizontal angles using a theodolite.

- k) What are the different elements of a remote sensing system? Explain with a neat sketch.
- l) Write a brief note on GIS.

**Part-III**

**Only Long Answer Type Questions (Answer Any Two out of Four)**

- Q3** The following bearings were observed at the stations for a closed traverse. **(16)**

Line	Fore Bearing	Back Bearing
AB	80°10'	259°0'
BC	120°20'	301°50'
CD	170°50'	350°50'
DE	230°10'	49°30'
EA	310°20'	130°15'

Determine the corrected included angles and corrected bearings of the lines. Use the method of included angles.

- Q4** The following consecutive staff readings (in m) were taken with a level: **(16)**

1.324, 2.605, 1.385, 0.638, 1.655, 1.085, 2.125, and 1.555.

The instrument was shifted after the 3<sup>rd</sup> and 6<sup>th</sup> readings. The 3<sup>rd</sup> reading was taken on a benchmark of elevation 100.5 m. Calculate reduced levels of all the staff locations using the Rise and Fall method. Apply all usual checks.

- Q5** (a) Derive the expression for curvature correction in levelling. **(8x2)**

(b) Stations A and B are 1600 m apart. A level was set up between A and B such that the distance from A is 80 m. The readings taken on A and B were 0.785 m and 2.735 m, respectively. Find the true difference in elevation between A and B by applying the combined correction for curvature and refraction.

- Q6** What are the characteristics of contour lines? Describe in detail with sketches. **(16)**