MODERN SURVEYING

BRANCH:- CIVIL

SEMESTER – THIRD

These important questions have been prepared using your previous exam papers (PYQs), verified concepts, and additional reference from trusted online academic sources.
For deeper understanding, please refer to your class notes as well.

Important Questions for Modern Surveying (2025)

1. Explain the step-by-step procedure of Temporary Adjustments of a Transit Theodolite (Setting up, Centering, Leveling, Focusing). Why is the elimination of parallax important?
2. Describe the procedure of measuring a horizontal angle by the **Repetition Method**. What are the advantages of this method over the Reiteration method?
3. What is a **Closing Error** in a closed traverse? Explain **Bowditch's Rule (Compass Rule)** and **Transit Rule** for adjusting the closing error of a traverse.
4. Derive the expressions for **Horizontal Distance (D)** and **Vertical Component (V)** using the Fixed Hair Method when the line of sight is **Inclined** and the staff is held **Vertically**.
5. Explain the **Principle of Tacheometry** (Stadia Method). What is an **Anallatic Lens**, where is it fitted, and what is its main advantage regarding the additive constant?
6. Derive the formula to find the **R.L. of the top of a tower** when the **base is inaccessible** and the two iPnstrument stations are in the **same vertical plane**.
7. Draw the **Block Diagram** of a Total Station. Explain its **Working Principle**, advantages, and the process of **Data Gathering** vs. **Data Processing**.
8. Briefly explain the following functions: **REM** (Remote Elevation Measurement), **MLM** (Missing Line Measurement), and **Resection**.
9. Define **Contour Line**. Draw neat sketches and explain the **Characteristics of Contours** for: (a) Hill, (b) Depression, (c) Ridge Line, (d) Valley Line, (e) Overhanging Cliff.
10. **Remote Sensing & GIS:**
    - **Remote Sensing:** Define it and explain the interaction of energy with the atmosphere.

- **GIS:** Define GIS. List and explain its 5 Key Components (Hardware, Software, Data, People, Methods).

Numerical Problems (Must Practice)

11. **Trigonometric Levelling:** The top of a chimney was sighted from two stations P and R at very different levels. P and R are in line with the chimney. given the angles of elevation and instrument heights, find the RL of the chimney top. (Focus on the **Single Plane Method**).
12. **Tacheometry:** A tacheometer was set up at station A and readings were taken on a vertically held staff at B. Given the vertical angle, staff readings, and constants (k=100, C=0.5), calculate the **Horizontal Distance** and **Reduced Level** of B.
13. **Reservoir Volume:** The areas enclosed by contour lines of a reservoir are given. Calculate the volume of water using the **Trapezoidal Rule** and **Prismoidal Rule**.

Short Notes Questions

14. Write short notes on the following:
    - **GPS (Global Positioning System)** and its segments.
    - **Lidar** (Light Detection and Ranging).
    - **Drone Surveying** vs **Aerial Surveying**.
    - **Face Left** vs **Face Right** Observations.
    - **Contour Interval** vs **Horizontal Equivalent**.

YOUTUBE VIDEO LINK :-

Trigonometrical levelling numerical part-1

This video is relevant because it specifically covers the JUT Diploma syllabus for Advanced/Modern Surveying and solves the exact type of "Base Inaccessible" numerical that appeared in the 2024 exam.