

UNIT V – THEODOLITE SURVEYING

1. **What is transit Theodolite?** (Nov/Dec 2010) (May/June 2007) (Nov/Dec 2006) (Nov/Dec 2009)
 - ❖ Transit theodolite is defined as the theodolite, in which its telescope can be rotated horizontally through 180° in the vertical plane.
2. **List out the major parts of a Theodolite.** (May/June 2012)
 1. Top Assembly (Alidade Assembly)
 2. Middle Assembly (Horizontal Circle Assembly)
 3. Bottom Assembly (Levelling Head Assembly)
3. **List the qualities of a Theodolite telescope?** (May/June 2006)
 - ✓ Internal focusing telescopes are best suited instead of external telescopes.
 - ✓ The magnification factor of the internal focusing telescope should be from 15 to 30 times of the diameter.
4. **State the location and function of a plate bubble of a Theodolite.** (Nov/Dec 2010)
 - ❖ Plate bubble is placed parallel to the trunnion axis at the upper plate (or vernier plate)
5. **How do you eliminate parallax in Theodolite?** (May/June 2012)

Parallax effect can be eliminated as follows.

 - (a) Focussing the eye piece
 - (b) Focussing the objective
6. **What are the two methods of measuring the horizontal angle using a Theodolite? When each method is advantageously used?** (Nov/Dec 2005) (Nov/Dec 2006)
 - Repetition Method
 - Reiteration Method
7. **What are the errors eliminated in measurements of horizontal angle by method of repetition?** (Apr/May 2011) (May/June 2006) (May/June 2007)
 - ❖ Instrumental and Observational errors are eliminated in measurements of horizontal angle by method of repetition.
8. **What you mean by temporary adjustments of a Theodolite?** (May/June 2013)

The adjustments required to be made at every instrument station before taking observations are called temporary adjustments.
The temporary adjustments of a theodolite consist of the following operations.

 1. Setting and centering the theodolite
 2. Levelling of the theodolite
 3. Elimination of parallax
9. **What is a spire test?** (Apr/May 2005)

In Spire Test, the horizontal axis (trunnion axis) is made perpendicular to the vertical axis. The objective of this adjustment is to ensure that the line of collimation revolves in a vertical plane, perpendicular to the vertical axis. This adjustment is carried out by Spire Test.
10. **What is a collimation adjustment?** (May/June 2012)

Adjustment of the level of the Telescope
In this adjustment, the line of collimation should remain horizontal, when the bubble of the level tube fitted on telescope is brought at the centre of its run. This adjustment is essential when a theodolite is used as a level and also when vertical angles are observed.

11. What is face right observation?

(Nov/Dec 2009)

- ❖ When the vertical circle of the theodolite is on the right of the observer, then the telescope position is called Face Right.

12. Explain face left and face right observations in Theodolite traversing? (Nov/Dec 2007)

- ❖ When the vertical circle of the theodolite is on the left of the observer, the telescope position is called Face Left.
- ❖ When the vertical circle of the theodolite is on the right of the observer, then the telescope position is called Face Right.

13. What kind of error can be eliminated by taking face left and face right observations? (Nov/Dec 2009)

- ❖ Instrumental error can be eliminated by taking face left and face right observations
- ❖ Line of collimation not perpendicular to the trunnion axis
- ❖ Horizontal axis not perpendicular to vertical axis
- ❖ Vertical Index Errors