

# PNS SCHOOL OF ENGINEERING & TECHNOLOGY

Nishamani vihar, marshaghai, kendrapara

Internal Assessment Examination – 2023 (4<sup>th</sup> Semester)

Sub-LAND SURVEY-1

Branch – Civil Engineering

Time: 1.5 Hours

NO-1

- What is precision and Accuracy?

Accuracy:-

The ability of an instrument to measure the accurate value is known as accuracy. In other words, it is the *the closeness of the measured value to a standard or true value*. Accuracy is obtained by taking small readings. The small reading reduces the error of the calculation.

Precision:-

The closeness of two or more measurements to each other is known as the precision of a substance. If you weigh a given substance five times and get 3.2 kg each time, then your measurement is very precise but not necessarily accurate. Precision is independent of accuracy.

- What are the instruments used in measuring distance?

The steel highway tape is generally used for the direct linear measurement of important survey lines. The length most commonly used is 100 ft. longer tapes of 200 and 300 ft are common for some contracts.

Chain, Tape etc.

- **What are the errors and mistakes in linear measurements?**

The difference between two or more measured values of the same quantity is known as error. In linear measurement, there can be various types of errors. They are;

1. Wrong length of chain
2. Bad ranging
3. Variation in temperature
4. Variation in tension
5. Sagging

- **Types of errors in surveying?**

#### **Types of Errors**

(1) Systematic errors. With this type of error, the measured value is biased due to a specific cause.

(2) Random errors. This type of error is caused by random circumstances during the measurement process.

(3) Negligent errors.

- **What are the uses of surveying?**
- Topographical maps showing hills, rivers, towns, villages, forests etc. are prepared by surveying.
- For planning and estimating new engineering projects like water supply and irrigation schemes, mines, railroads, bridges, transmission lines, buildings etc. surveying is required.
- Cadastral Map showing the boundaries field houses and other properties are prepared by surveying.
- Engineering map showing the position of engineering works like roads, railways, buildings, dams, canals etc. are prepared through surveying.
- To set out a work and transfer details from map to ground knowledge of surveying is used.

- For planning navigation routes and harbors, marine and hydro-graphic surveying are used.
  - To help military strategic planning, military maps are prepared by surveying.
  - For exploring mineral wealth, mine survey is necessary
  - To determining different strata in the earth crust, geological surveys are required
  - Archaeological surveys are used to unearth relics of antiquity.
- 
- Describe the primary classification of surveying?

Based upon the requirements and magnitude of the survey, the survey has been classified broadly into two main categories:

- Plane surveying
- Geodetic surveying

### Plane Surveying

In this type of surveying, the mean surface of the earth is considered as a plane, and the spheroidal shape is neglected. All triangles formed by survey lines are considered as plane triangles. The level line is taken as straight, and all plumb lines are considered to be parallel. Plane surveying is done for smaller areas in consideration. If a large area is considered, the discrepancy will become apparent between the area of the horizontal plane and the actual curved area of the earth's surface.

### Geodetic surveying

This is a type of surveying in which the shape of the earth is taken into account. All lines are taken as curved lines and triangles as spherical triangles. Geodetic survey includes work of larger magnitude and high degree of accuracy. The purpose of geodetic survey is to determine the precise position on the surface of earth, of a system of widely distant

points which form control stations to which surveys of less precision may be referred. Geodetic surveys are employed for an area larger than  $195 \text{ km}^2$ .