PNS SCHOOL OF ENGINEERING & TECHNOLOGY

Nishamani vihar, marshaghai, kendrapara

Internal Assessment Examination – 2023(6th Semester)

Sub-LAND SURVEY 2 (TH-1)

Branch – Civil Engineering

Time: 1.5 Hours

NO-1

Answer all the questions. (5 *2)

- **WHAT IS TACHEOMETRIC CHACTERISTICS?**

  Tachometric is a branch of surveying in which horizontal and vertical distances are determined by taking angular observation with an instrument known as a tachometer. Tachometric surveying is adopted in rough in rough and difficult terrain where direct leveling and chaining are either not possible or very tedious.

- **WHAT ARE THE PORPOSE OF TACHEOMETRIC SURVEYING?**

The primary object of tachometry is the preparation of countered plans. It is considered to be rapid and accurate in rough country and has thus been widely used by engineers in location surveys for railways, canals, reservoirs, etc.

Tachometry provides more accuracy on distances measured with a tape or a chain.

- **WHAT ARE THE TYPES OF CURVE?**

  I.   SIMPLE CIRCULAR CVURVE
  II.   REVERSE CURVE
  III. COMPOND CURVE
  IV.   TRANSITION CURVE

- **WHAT IS REVERSE CURVE?**

A reverse curve is two adjacent, or nearly so, circular curves with deflections in opposite directions. The curves may have equal or unequal radii and/or deflection angles.

- **WHAT IS HORIZONTAL & VERTICAL CURVE?**

  Curves provided in the horizontal plane are known as horizontal curves and are generally circular or parabolic. Curves provided in the vertical plane are known as vertical curve.

NO-2

LONG QUESTIONS (1*10)

1- **DERIVE THE ELEMENTS OF SIMPLE CIRCULAR CURVE?**

Elements of a simple circular curve:-

- *PC* = Point of curvature. It is the beginning of curve.
- *PT* = Point of tangency. It is the end of curve.
- *PI* = Point of intersection of the tangents. Also called vertex
- *T* = Length of tangent from *PC* to *PI* and from *PI* to *PT*. It is known as subtangent.
- *R* = Radius of simple curve, or simply radius.
- *L* = Length of chord from *PC* to *PT*. Point *Q* as shown below is the midpoint of *L*.
- *Lc* = Length of curve from *PC* to *PT*. Point *M* in the the figure is the midpoint of *Lc*.
- *E* = External distance, the nearest distance from *PI* to the curve.
- *m* = Middle ordinate, the distance from midpoint of curve to midpoint of chord.
- *I* = Deflection angle (also called *angle of intersection* and *central angle*). It is the angle of intersection of the tangents. The angle subtended by *PC* and *PT* at *O* is also equal to *I*, where *O* is the center of the circular curve from the above figure.

- x = offset distance from tangent to the curve. Note: x is perpendicular to T.
- ϑ = offset angle subtended at PC between PI and any point in the curve
- D = Degree of curve. It is the central angle subtended by a length of curve equal to one station. In English system, one station is equal to 100 ft and in SI, one station is equal to 20 m.
- Sub chord = chord distance between two adjacent full stations.