

SRI VIDYA COLLEGE OF ENGINEERING AND TECHNOLOGYDEPARTMENT OF CIVIL ENGINEERINGTWO MARKS QUESTIONS AND ANSWERSUNIT I – INTRODUCTION AND CHAIN SRUVEYING

**1. Define surveying and list out its various classification. (Nov/Dec 2005) Classify surveying based on instrument used. (May / June 2006)**

Based on the instruments used and method of surveying, it can be classified as follows.

1. Chain Surveying
2. Compass Surveying
3. Plain Table Surveying
4. Level Surveying (or) Levelling
5. Theodolite Surveying
6. Tacheometric Surveying
7. Total Station Surveying etc.

**2. What is the object of Surveying? (May / June 2012)**

Following are the various purposes of the surveying methods.

1. To check out the alignment of various engineering structures.
2. To calculate the areas and volumes, involved in the various engineering projects.
3. To prepare the plans and maps, sections (or) profiles, contours, etc.

**3. Write the difference between a map and a plan.**

Sl. No	Factor	Map	Plan
1.	Scale	Maps are the drawing with a small scale.	Plans are also the drawing with larger scale.
2.	Details	A map generally deals about the geographical details.	A plan deals about the details of the engineering structures.

**4. What do you mean by plane surveying? (May / June 2013)**

Plane surveying is defined as the division of surveying, in which all the survey works are carried based on the assumption that the surface of earth is a plane and the curvature of the earth is ignored.

**5. What is meant by geodetic surveying? (Nov/Dec 2012)**

The surveys, in which curvature of the earth is taken into account and higher degree of accuracy, required is called Geodetic surveying.

**6. Name the different ways of Classification of surveying. (May / June 2006)**

Classification of surveys based on,

(i) Purpose of surveying

(ii) Nature of the field

(iii) Methods employed

(iv) Instruments used

**7. What are the principles of Surveying? (Nov/Dec 2009) (Nov/Dec 2010) (Or) Describe the principles of Surveying? (Apr/May 2011) (May / June 2007)**

Following are the two fundamental principles of surveying.

- (a) Working from Whole to Part
- (b) Location of a Point

**8. How do you fix a point from the control points (or a survey line)?**

The position of third point can be located from the control points by any one of the following ways.

1. Two linear measurements
2. Two angular measurements.
3. One linear measurement and One angular measurement.

**9. What are the instruments used for the chain surveying? (May / June 2006) (Or) List the various accessories used in chain surveying. (Nov/Dec 2006)**

Following instruments are used in chain surveying

- |                |                   |                 |
|----------------|-------------------|-----------------|
| 1. Chain       | 2. Tape           | 3. Ranging Rods |
| 4. Offset Rods | 5. Plumb Bob      | 6. Pegs         |
| 7. Cross-Staff | 8. Optical Square | 9. Arrows       |
|                |                   | 10. Whites etc. |

**10. Write the equation for correction of temperature. (Nov/Dec 2009)**

Temperature Correction,  
Where,

$$C_t = \alpha (T_m - T_0) L$$

$\alpha$  - Coefficient of thermal expansion

$T_m$  - Mean Temperature during measurements

$T_0$  - Normal Temperature at standardization

$L$  - Measured length of the line

**11. What are arrows? (Nov/Dec 2009)**

Chain pins (or) Arrows are the steel wire of 4 mm diameter and its length may vary from 25 cm to 50 cm. One end of the arrow is bent into a loop of a circle of 50 cm diameter and the other end is made sharpened point. Arrows are used to indicate (or to mark) the end of a chain line.

**12. What is Plumb Bob? (Nov/Dec 2009)**

Plumb bobs are used to test the verticality of ranging rods and levelling staves. It is also used to transfer the end points of the chain onto ground while measuring the distances in a hilly terrain.

**13. What is the purpose of an Optical Square? (Apr/May 2011)**

Optical Squares are also like cross-staves used for setting out the right angles in chain-surveying. It consists of a circular metal box about 5 cm in diameter and the 1.25 cm deep. The periphery is formed by two cylinders, one capable of sliding over the other so that the eye and object openings can be closed to protect the mirrors from the dust.

**14. What do you mean by reciprocal Ranging? (Apr/May 2010) (May / June 2012) (May / June 2006) (Apr/May 2008)**

Reciprocal ranging is the method of indirect ranging, and it is adopted when the two end stations are not inter-visible due to raised grounds.

**15. What circumstances in which reciprocal ranging is used? (May / June 2007) (or) When do you require Indirect Ranging? (Nov/Dec 2012) (Or) Explain the use of reciprocal Ranging? (May / June 2013)**

Reciprocal ranging is the method of indirect ranging, and it is adopted when the two end stations are not inter-visible due to raised grounds.

**16. What do you understand by the term traversing? (Nov/Dec 2009)**

Traverse is defined as the series of connected straight lines, each joining two stations on the ground. The endpoints are called traverse stations. The straight lines between the two consecutive stations are called traverse legs. There are two types of traverse

1. Closed Traverse
2. Open Traverse

**17. Who are Leader and follower when a line is being chained? (Nov/Dec 2010)**

For the chaining operations, two chainmen are required. The chainman at the forward end of the chain is called a leader. The chainman at the other end of the chain is called a follower.

**18. In a chain how will you set out a right angle? (Nov/Dec 2011)**

1. Cross-staff is the instrument used to locate the intersection point of a particular offset on a chain line
2. Optical Squares are also like cross-staves used for setting out the right angles in chain-surveying.

**19. Explain the use of traversing? (May / June 2013)**

Traversing are used,

- ✓ To Fix the points on the ground.
- ✓ To survey when the area is large and with irregular boundaries and obstacles.

**20. What are offsets? Name the types. (May / June 2007) (Nov/Dec 2007)**

Offsets are defined as the lateral measurements, taken from the chain line, to locate the position of the boundaries, culverts, building, road markings, etc., An offset may be either left or right of the chain line. There are two types of offsets, which are

- (i) Perpendicular offset
- (ii) Oblique offset

**21. Differentiate between check line and tie line. (May / June 2009) (Nov/Dec 2006)**

- ✓ The line which runs across the field to check the accuracy of the survey work is called check-line (or) proof line.
- ✓ A tie-line is a one which connects the two-tie stations. Sometimes, tie lines are used to check the accuracy of the field work and used to take the offset distances.

**22. Explain the terms accuracy and precision in measurement. (Nov/Dec 2007)**

- ✓ The degree of accuracy required in surveying is mainly depending on the purpose and scale of the map. If the scale is large, the accuracy will be higher and the accuracy is low for lower scaled maps.
- ✓

**23. What are different sources of errors in chain surveying? (Apr/May 2005)**

- (a) Displacement of the arrows
- (b) Adding (or) Omitting the full chain length
- (c) Reading from the wrong end of the chain
- (d) Reading numbers wrongly
- (e) Reading wrong metre marks
- (f) Recording the reading in the field book wrongly etc.