

Units and Measurements

Multiple Choice Questions (MCQs) on Measurement of Length

Direct Methods

1. Which instrument is commonly used to measure the length of a table?
 - a) Vernier calipers
 - b) Screw gauge
 - c) Metre scale
 - d) Micrometer
2. The least count of a standard vernier caliper is:
 - a) 0.01 mm
 - b) 0.1 mm
 - c) 1 mm
 - d) 0.001 mm
3. Which instrument is best suited for measuring the diameter of a thin wire?
 - a) Metre scale
 - b) Vernier calipers
 - c) Screw gauge
 - d) Tape measure
4. What is the typical accuracy of measurements taken with a screw gauge?
 - a) 0.1 mm
 - b) 0.01 mm
 - c) 1 mm
 - d) 0.001 mm
5. Vernier calipers are primarily used for measuring:
 - a) Large distances
 - b) Internal and external dimensions
 - c) Very small distances
 - d) Angular measurements

Measurement of Large Distances (Parallax Method)

6. The parallax method is used to measure:
 - a) Small lengths

- b) Large distances
- c) Mass of objects
- d) Time intervals

7. In the parallax method, the baseline refers to:

- a) The angle of observation
- b) The distance between two observation points
- c) The distance to the object being measured
- d) The height of the observation point

8. The parallax angle is:

- a) The distance between two observation points
- b) The angle formed at the object being measured by two lines of sight
- c) The length of the baseline
- d) The angle of elevation of the object

9. Which of the following is essential for using the parallax method?

- a) High-precision instruments
- b) A very distant object
- c) A vernier caliper
- d) A micrometer

10. To measure the distance to a star using the parallax method, the baseline used is typically:

- a) The diameter of the Earth
- b) The distance between two cities
- c) The diameter of Earth's orbit around the Sun
- d) The distance from Earth to the Moon

Estimation of Very Small Distances

11. Electron microscopes are used to measure distances on the order of:

- a) Millimeters
- b) Centimeters
- c) Nanometers
- d) Meters

12. Which method can measure the size of a molecule like oleic acid?

- a) Vernier calipers
- b) Parallax method
- c) Tunneling microscopy
- d) Metre scale

13. The wavelength of visible light limits the resolution of:

- a) Electron microscopes

- b) Optical microscopes
- c) Vernier calipers
- d) Screw gauges

14. What is the typical size range of molecules that tunneling microscopy can measure?

- a) 10^{-3} m to 10^{-2} m
- b) 10^{-6} m to 10^{-5} m
- c) 10^{-10} m to 10^{-9} m
- d) 10^{-1} m to 10^0 m

15. Interferometry is used to measure:

- a) Large distances
- b) Small masses
- c) Very small lengths
- d) Time intervals

Key

- 1. c
- 2. a
- 3. c
- 4. b
- 5. b
- 6. b
- 7. b
- 8. b
- 9. b
- 10. c
- 11. c
- 12. c
- 13. b
- 14. c
- 15. c