THE SMART STUDY NOTES
CLASS 9th New PHYSICS
Chapter 1: Physical Quantities and Measurements

Additional Multiple Choice Questions (MCQs)

Section 1.1: Physical and Non-Physical Quantities

1. Which of the following is a physical quantity?
   (a) Love (b) Length (c) Fear (d) Wisdom
2. Which of the following is a non-physical quantity?
   (a) Temperature (b) Density (c) Beauty (d) Time
3. Which of the following can be measured using instruments?
   (a) Affection (b) Volume (c) Wisdom (d) Fear
4. Which of the following is true about non-physical quantities?
   (a) They can be measured using tools.
   (b) They are based on perception.
   (c) They have numerical values.
   (d) They are derived from base quantities.

Section 1.2: Base and Derived Physical Quantities

5. Which of the following is a base quantity?
   (a) Speed (b) Length (c) Area (d) Density
6. Which of the following is a derived quantity?
   (a) Mass (b) Time (c) Speed (d) Temperature
7. Which of the following is derived from base quantities?
   (a) Length (b) Mass (c) Volume (d) Time
8. Which of the following is NOT a base quantity?
   (a) Length (b) Mass (c) Speed (d) Time

Section 1.3: International System of Units (SI)

9. Which of the following is the SI unit of length?
   (a) Kilogram (b) Metre (c) Second (d) Kelvin
10. Which of the following is the SI unit of mass?
    (a) Metre (b) Kilogram (c) Second (d) Ampere
11. Which of the following is the SI unit of time?
    (a) Metre (b) Kilogram (c) Second (d) Kelvin
12. Which of the following is the SI unit of temperature?
    (a) Kelvin (b) Celsius (c) Fahrenheit (d) Ampere
13. Which of the following is the SI unit of electric current?
    (a) Ampere (b) Volt (c) Ohm (d) Coulomb
14. Which of the following is the SI unit of luminous intensity?
    (a) Candela (b) Lux (c) Lumen (d) Kelvin
15. Which of the following is the SI unit of amount of substance?
    (a) Mole (b) Gram (c) Kilogram (d) Liter

Section 1.4: Scientific Notation

16. Which of the following is the correct scientific notation for 0.000045?
    (a) $4.5X10^{-5}$ (b) $4.5X10^{5}$
    (c) $4.5X10^{-6}$ (d) $4.5X10^{7}$
17. Which of the following is the correct scientific notation for 500,000?
    (a) $5X10^{5}$ (b) $5X10^{-5}$
    (c) $5X10^{6}$ (d) $5X10^{-4}$
18. Which of the following is the correct scientific notation for 0.0032?
    (a) $3.2X10^{-3}$ (b) $3.2X10^{3}$ (c) $32X10^{-4}$ (d) $3.2X10^{4}$

Section 1.5: Length Measuring Instruments

19. Which instrument is used to measure small lengths down to 1/10th of a millimeter?
    (a) Metre rule (b) Vernier Callipers
    (c) Micrometer screw gauge (d) Measuring tape
20. What is the least count of a Vernier Callipers?
    (a) 0.01 mm (b) 0.1 mm (c) 1 mm (d) 0.05 mm
21. What is the least count of a micrometer screw gauge?
    (a) 0.01 mm (b) 0.1 mm (c) 1 mm (d) 0.05 mm
22. Which instrument is used to measure the diameter of a wire?
    (a) Vernier Callipers (b) Micrometer screw gauge
    (c) Metre rule (d) Measuring tape
23. Which instrument is used to measure the thickness of a metal sheet?
    (a) Vernier Callipers (b) Micrometer screw gauge
    (c) Metre rule (d) Measuring tape

Section 1.6: Mass Measuring Instruments

24. Which instrument is used to measure mass in the laboratory?
    (a) Spring balance (b) Physical balance
    (c) Digital balance (d) All of the above
25. Which of the following is the most precise balance?
    (a) Spring balance (b) Physical balance
    (c) Digital electronic balance (d) Beam balance

Section 1.7: Time Measuring Instruments

26. Which instrument is used to measure short time intervals?

(a) Stopwatch (b) Clock (c) Pendulum clock
(d) Atomic clock

27. What is the least count of a mechanical stopwatch?
(a) 0.1 s (b) 0.01 s (c) 1 s (d) 0.001 s

28. Which instrument can measure time intervals as short as one-ten thousandth of a second?
(a) Mechanical stopwatch (b) Digital stopwatch
(c) Atomic clock (d) Pendulum clock

Section 1.8: Volume Measuring Instruments

29. Which instrument is used to measure the volume of liquids?
(a) Measuring cylinder (b) Displacement can
(c) Beaker (d) All of the above

30. Which instrument is used to measure the volume of a solid by displacement?
(a) Measuring cylinder (b) Displacement can
(c) Beaker (d) All of the above

Section 1.9: Errors in Measurements*

31. Which of the following is a type of experimental error?
(a) Human error (b) Systematic error
(c) Random error (d) All of the above

32. Which of the following is an example of a human error?
(a) Incorrect calibration of an instrument
(b) Parallax error (c) Fluctuation in temperature
(d) All of the above

33. Which of the following is an example of a systematic error?
(a) Incorrect calibration of an instrument
(b) Parallax error (c) Fluctuation in temperature
(d) All of the above

34. Which of the following is an example of a random error?
(a) Incorrect calibration of an instrument
(b) Parallax error (c) Fluctuation in temperature
(d) All of the above

Section 1.10: Uncertainty in a Measurement

35. What is the maximum uncertainty in a measurement taken with a metre rule?
(a) ± 0.05 cm (b) ± 0.1 cm
(c) ± 0.5 cm (d) ± 1 cm

36. How can the uncertainty in a measurement be reduced?
(a) By taking multiple readings
(b) By using a more precise instrument
(c) By averaging the readings
(d) All of the above

Section 1.11: Significant Figures

37. How many significant figures are in the number 0.0045?
(a) 2 (b) 3 (c) 4 (d) 5

38. How many significant figures are in the number 2.047?
(a) 2 (b) 3 (c) 4 (d) 5

39. How many significant figures are in the number 3.40?
(a) 2 (b) 3 (c) 4 (d) 5

40. How many significant figures are in the number 3.420×10^4?
(a) 2 (b) 3 (c) 4 (d) 5

Section 1.12: Precision and Accuracy

41. Which of the following is true about precision?
(a) It refers to how close measurements are to each other. (b) It refers to how close a measurement is to the true value. (c) It is determined by the least count of the instrument. (d) Both a and c

42. Which of the following is true about accuracy?
(a) It refers to how close measurements are to each other. (b) It refers to how close a measurement is to the true value. (c) It is determined by the least count of the instrument. (d) Both a and c

Section 1.13: Rounding off the Digits

43. What is the correct rounding off of 4.45 to 2 significant figures?
(a) 4.4 (b) 4.5 (c) 4.6 (d) 4.0

44. What is the correct rounding off of 4.55 to 2 significant figures?
(a) 4.5 (b) 4.6 (c) 4.0 (d) 4.4

45. Which instrument is most suitable for measuring the thickness of a few sheets of cardboard?
(a) Metre rule (b) Measuring tape
(c) Vernier Callipers (d) Micrometer screw gauge

46. One femtometre is equal to:
(a) 10^{-9}m (b) 10^{-15} m (c) 10^{9}m (d) 10^{15}m

47. A light year is a unit of:
(a) Light (b) Time (c) Distance (d) Speed

48. Which one is a non-physical quantity?
(a) Distance (b) Density (c) Colour (d) Temperature

49. When using a measuring cylinder, one precaution to take is to:
(a) Check for the zero error
(b) Look at the meniscus from below the level of the water surface

(c) Take several readings by looking from more than one direction

(d) Position the eye in line with the bottom of the meniscus

50. Volume of water consumed by you per day is estimated in:

(a) Millilitre (b) Litre (c) Kilogram (d) Cubic metre

EXERCISE

A Multiple Choice Questions

1.1. The instrument that is most suitable for measuring the thickness of sheets of cardboard is a:

(a) metre rule (b) measuring tape

(c) Vernier Callipers (d) micrometer screw gauge

Correct Answer: (c)

12. One femtometer is equal to:

(a) 10^{-9}m (b) 10^{-15} m (c) 10^{9}m (d) 10^{15}m

Correct Answer: (a)

1.3. A light year is a unit of:

(a) Light (b) time (c) distance (d) speed

Correct Answer: (c)

1.4. Which one is a non-physical quantity?

(a) Distance (b) density (c) colour (d) temperature

Correct Answer: (c)

1.5. When using a measuring cylinder, one precaution to take is to:

(a) Check for the zero error

(b) Look at the meniscus from below the level of the water surface

(c) Take several readings by looking from more than one direction

(d) Position the eye in line with the bottom of the meniscus

Correct Answer: (d)

1.6. Volume of water consumed by you per day is estimated in:

(a) millilitre (b) litre (c) kilogram (d) cubic metre

Correct Answer: (b)

1.7. A displacement can is used to measure:

(a) Mass of a liquid (b) mass of a solid

(c) Volume of a liquid (d) volume of a solid

Correct Answer: (d)

1.8. Two rods with lengths 12,321 cm and 10,3 cm are placed side by side in difference in their lengths is:

(a) 2.02 cm (b) 2.0 cm (c) 2 cm (d) 2.021 cm

Correct Answer: (a)

1.9. Four students measure the diameter of a cylinder with Vernier Callipers. Which of the following readings is correct?

(a) 3.4 cm (b) 3.475 cm (c) 3.47 cm (d) 3.5 cm

Correct Answer: (c)

1.10. Which of the following measures are likely to represent the thickness of a sheet of this book?

(a) 6 X 10^{-25}m (b) 1 X 10^{-4} m (c) 1.2 X 10^{-25} m

(d) 4 X 10^{-2}m

Correct Answer: (b)

1.11. In a Vernier Callipers ten smallest divisions of the Vernier scale are equal to nine smallest divisions of the main scale. If the smallest division of the main scale is half millimetre, the Vernier constant is equal to:

(a) 0.5 mm (b) 0.1 mm (c) 0.05 mm (d) 0.001 mm

Correct Answer: (c)

Answer key of the (MCQs)

1. b 2. c 3. b 4. b 5. b 6. c 7. c 8. c 9. b 10. b 11. c 12. a 13. a 14. a 15. a 16. a 17. a 18. a 19. b 20. b 21. a 22. b 23. b 24. d 25. c 26. a 27. a 28. b 29. a 30. b 31. d 32. b 33. a 34. c 35. a 36. d 37. a 38. c 39. b 40. c 41. d 42. b 43. a 44. b 45. c 46. b 47. c 48. c 49. d 50. b