

Class: IX
Subject: Maths
Topic: Number System
No. of Questions: 29

1. The physical quantity having the dimensional formula $[M^{-1}L^{-3}T^3A^2]$ is
 - A. resistance
 - B. resistivity
 - C. conductivity
 - D. electromotive force
2. If the error in the measurement of radius of a sphere is 1%, what will be the error in the measurement of its volume?
 - A. 1%
 - B. 1/3%
 - C. 3%
 - D. 10%
3. In the expression $S = a + bt + ct^2$, 'S' is measured in metres (m) and 't' in seconds (s). The unit of 'c' is
 - A. m^2
 - B. m
 - C. ms^{-1}
 - D. ms^{-2}
4. The volume of a cube in m^3 is equal to the surface area of the cube in m^2 . The volume of the cube is
 - A. $64 m^3$
 - B. $216 m^3$
 - C. $512 m^3$
 - D. $196 m^3$

5. If 'C' and 'R' denote capacitance and resistance respectively, what will be the dimensions of 'C R'?

- A. $[M^0L^0TA^0]$
- B. $[ML^0TA^{-2}]$
- C. $[ML^0TA^2]$
- D. $[MLTA^{-2}]$

6. The 'rad' is the correct unit used to report the measurement of

- A. the ability of a beam of gamma ray photons to produce ions in a target
- B. the energy delivered by radiation to a target
- C. the biological effect of a radiation
- D. the rate of decay of a radioactive source


7. Match List I (physical quantities) with List II (related units).

List-I	List-II
A. Magnetic field intensity	1. Wb m^{-1}
B. Magnetic flux	2. Wb m^{-2}
C. Magnetic potential	3. Wb
D. Magnetic induction	4. Am^{-1}

- A. A - 4, B - 3, C - 1, D - 2
- B. A - 1, B - 4, C - 2, D - 3
- C. A - 3, B - 1, C - 4, D - 2
- D. A - 2, B - 4, C - 1, D - 3

8. The chosen standard quantity with which other quantities have to be compared is called the _____.

- A. measurement
- B. unit
- C. magnitude
- D. direction

9. Out of the following four dimensional quantities, which one can be called a dimensional constant?
- A. Acceleration due to gravity
 - B. Surface tension of water
 - C. Weight of a standard kilogram mass
 - D. Velocity of light in vacuum
10. The dimensions of $\frac{1}{\sqrt{\mu_0 \epsilon_0}}$ (where $[M^0 LT^{-1}]$ permittivity of free space, μ_0 : Magnetic permeability electric field) are
- A. $[MLT^{-1}]$
 - B. $[ML^2T^{-2}]$
 - C. $[ML^{-1}T^{-2}]$
 - D. $[ML^2T^{-1}]$
11. Which of the following is not a physical quantity? 
- A. Kilogram
 - B. Impulse
 - C. Energy
 - D. Density
12. The velocity 'v' of a particle at time 't' is given by $v = at + \frac{b}{t} + \frac{c}{t}$, where 'a', 'b' and 'c' are constants. The dimensions of 'a', 'b' and 'c' respectively, are
- A. $[LT^{-2}]$, $[L]$ and $[T]$
 - B. $[L^2]$, $[T]$ and $[LT^2]$
 - C. $[LT^2]$, $[LT]$ and $[L]$
 - D. $[L]$, $[LT]$ and $[T^2]$
13. If a screw gauge moves 1mm in two rotations, the pitch of the screw gauge is _____.
- A. 1 mm
 - B. 2 mm
 - C. 0.5 mm
 - D. 3 mm

14. What is the dimensional formula of thermal conductivity?
- A. $[MLT^{-1}\theta^{-1}]$
 - B. $[MLT^{-3}\theta^{-1}]$
 - C. $[M^2LT^{-3}\theta^{-2}]$
 - D. $[ML^2T^{-2}\theta]$
15. Which of the following units denotes the dimensions $[ML^2/Q^2]$, where 'Q' represents the electric charge?
- A. Wb/m^2
 - B. Henry(H)
 - C. H/m^2
 - D. Weber(Wb)
16. In the relation, $p = \frac{\alpha}{\beta} e^{-\frac{az}{k\theta}}$ 'P' is pressure, 'z' is distance, 'k' is Boltzmann constant and 'θ' is temperature, what will be the dimensional formula of β?
- A. $[M^0L^2T^0]$
 - B. $[ML^2T]$
 - C. $[ML^0T^{-1}]$
 - D. $[ML^2T^{-1}]$
17. A force 'F' is applied on a square plate of side 'L'. If percentage error in determination of 'L' is 3% and 'F' is 4%, the permissible error in pressure is
- A. 2%
 - B. 4%
 - C. 6%
 - D. 10%
18. What is dimensional formula of Torque?
- A. ML^2T^{-2}
 - B. MLT^2
 - C. $M^1L^2T^{-1}$
 - D. None of these

19. The dimensional formula of electric potential are
- A. $[ML^2T^{-3}A^{-1}]$
 - B. $[MLT^{-3}A^{-1}]$
 - C. $[ML^2TA]$
 - D. $[ML^2T^{-1}A]$
20. What is the difference between Ao and A.U.?
21. Define S.I. unit of solid angle?
22. Name physical quantities whose units are electron volt and pascal?
23. When a planet X is at a distance of 824.7 million kilometers from earth its angular diameter is measured to be 35.72^{11} of arc. Calculate the diameter of 'X'.
24. A radar signal is beamed towards a planet from the earth and its echo is received seven minutes later. Calculate the velocity of the signal, if the distance between the planet and the earth is $6.3 \times 10^{10}m$?
25. Give two methods for measuring time intervals?
26. Find the dimensions of latent heat and specific heat?
27. In wander waal's equation $\left(\frac{P+a}{V^2}\right)(V - b = RT)$
28. E, m, l and G denote energy, mass, angular momentum and gravitational constant respectively. Determine the dimensions of EL^2 / m^5G^2
29. (a) State which of the following are dimensionally current
- (i) Pressure = Energy per unit volume
 - (ii) Pressure = Momentum \times volume \times time
- (b) The density of cylindrical rod was measured by the formula:- $P = \frac{4m}{\pi D^2 l}$
- The percentage in m, D and l are 1%, 1.5% and 0.5%. Calculate the % error in the calculated value of density?