

1. The dimensions of are those of
a) velocity b) time c) capacitance d) distance
2. Taking into account the significant figures, the product of 109.832 and 0.6107 should be written as
a) 67.0744 b) 67.1 c) 67.07 d) 67.074402
3. The dimensions of torque are
a) ML^2T^{-2} b) MLT^2 c) MLT^{-1} d) MT^{-2}
4. Which of the following quantities has the dimensional formula ML^2T^{-3} ?
a) Bulk modulus b) Coefficient of viscosity
c) Energy d) Power
5. The dimensions of the ratio of angular to linear momentum is
a) $M^0L^1T^0$ b) $M^1L^1T^1$ c) $M^1L^2T^{-1}$ d) $M^{-1}L^{-1}T^{-1}$
6. The random error in the arithmetic mean of 100 observations is x. The random error in the arithmetic mean of 400 observations would be
a) 4x b) $\frac{x}{4}$ c) 2x d) $\frac{x}{2}$
7. The velocity v of a particle is given in terms of time t by the equation $v = at + \frac{b}{t+c}$. The dimensions of a, b, c are respectively
a) L^2, T, LT^2 b) LT^2, LT, L c) LT^{-2}, L, T d) L, LT, T^2
8. The dimensions of mc^2 are
a) MLT^{-1} b) ML^2T^{-1} c) ML^2T^{-2} d) ML^2T^2
9. Which of the following is not a unit of energy?
a) Ws b) $kgms^{-1}$ c) Nm d) joule
10. 1 micron (μ) is
a) 10^{-9} m b) 10^{-12} m c) 10^{-6} m d) 10^{-15} m
11. The unit of Stefan's constant σ is
a) $\frac{\text{watt}^4}{mK^4}$ b) $\frac{\text{calorie}}{m^2K^4}$ c) $\frac{\text{watt}}{m^2K^4}$ d) $\frac{\text{joule}}{m^2K^4}$
12. Newton second is a unit of
a) force b) impulse c) momentum d) energy
13. If ΔX is absolute error in the measurement of X and ΔY is absolute error in the measurement of Y, then maximum absolute error in the measurement of difference of X and Y is
a) $\pm (\Delta X - \Delta Y)$ b) $(\Delta X + \Delta Y)$ c) $\pm \frac{\Delta X}{\Delta Y}$ d) $\pm \Delta X \Delta Y$
14. The dimensional formula of universal gravitational constant is
a) MLT^{-2} b) ML^3T^{-2} c) $M^{-1}L^3T^{-2}$ d) MLT^2
15. If the units of M and L are doubled then the unit of kinetic energy will be come
a) 8 time b) 16 time c) 4 time d) 2 time

16. Dimensional analysis gives
 a) no information about dimensionless constants
 b) information about dimensionless constant
 c) information about dimensionless constants if quantity does not depend upon more than three variables
 d) information about dimensionless constants if quantity depends upon single variable
17. If force (F), area (A) and density (D) are taken as fundamental quantities, the dimensional formula for Young's modulus will be
 a) $FA^{-2}D^2$ b) $FA^{-1}D^0$ c) $F^{-1}A^{-1}D^{-1}$ d) $FA^{-1}D$
18. The dimensions of the coefficient of viscosity are $[ML^{-1}T^{-1}]$. To convert the CGS unit poise (P) to the MKS unit poiseuille (Pl), the poise has to be multiplied by
 a) 10^{-1} v) 10 c) 10^9 d) 10^7
19. The dimensions of "light-year" are
 a) LT^{-1} b) T c) ML^2T^{-2} d) L
20. The velocity of a particle is given by $v = at^2 + bt + c$. If v is measured in ms^{-1} and t is measured in s, the unit of
 a) a is ms^{-1} b) b is ms^{-1} c) c is ms^{-1} d) a and b are same but that of c is different
21. The pair having the same dimension is
 a) angular momentum, work b) work, torque
 c) potential energy, linear momentum d) kinetic energy, velocity
22. Given that $y = a \cos\left(\frac{t}{p} - qx\right)$, where t represents time in second and x distance in metre. Which of the following statements is true?
 a) The unit of x is same as that of q. b) The unit of x is same as that of p.
 c) The unit of t is same as that of q. d) The unit of t is same as that of p.
23. Electron volt (eV) is a unit of
 a) charge b) potential c) energy d) coulomb repulsion
24. A system has basic dimensions as density [D], velocity [V] and area [A]. The dimensional representation of force in this system is
 a) $[AV^2D]$ b) $[A^2VD]$ c) $[AVD^2]$ d) $[A^0VD]$
25. A quantity X is given by $\epsilon_0 L \frac{\Delta V}{\Delta t}$, where ϵ_0 is the permittivity of free space. L is a length, ΔV is a potential difference and Δt is a time interval. The dimensional formula for X is the same as that of
 a) resistance b) charge c) voltage d) current