FREEDOM INTERNATIONAL SCHOOL
WORKSHEET
PHYSICS
CLASS XI
UNITS AND MEASUREMENTS

1. When 1m, 1kg and 1 min are taken as the fundamental units, the magnitude of the force is 36 units. What will the value of this force be in the CGS system?
2. Find the value of 100 J on a system that has 20 cm, 250 g and half minute as fundamental units of length, mass and time.
3. Find the dimensions of a/b in the equation:
   P = $\frac{a-t^2}{bx}$, where P is pressure, x is distance and t is time.
4. In the expression P = E$l^2m^{-5}G^{-2}$; E, m, l and G denote energy, mass angular momentum and gravitational constant, respectively. Show that P is a dimensionless quantity.
5. In the equation: y = a sin ($\omega t - kx$), t and x stand for time and distance respectively. Obtain the dimensional formula for ω and k.
6. Using the method of dimensions, derive an expression for the energy of a body executing S.H.M; assuming this energy depends upon its mass m, frequency ν and amplitude of vibration r.
7. A small spherical ball of radius r falls with velocity v through a liquid having coefficient of viscosity η. Find the viscous drag F on the ball assuming it depends on η, r and v. Take K = 6π.
8. The diameter of a circle is 1.06 m. Calculate the area to an appropriate number of significant figures. Take $\pi = 3.14$.
9. The length and the radius of a cylinder measured with slide calipers are found to be 4.54 cm and 1.75 cm respectively. Calculate the volume of the cylinder.
10. When white light travels through glass, the refractive index of glass is found to vary with wavelength as $\mu = A + \frac{B}{\lambda^2}$. Using the principle of homogeneity of dimensions, find the SI units in which the constants A and B must be expressed.