# WORKSHEET – 1 CHAPTER 2

# UNITS AND MEASUREMENTS

1. In CGS system, the value of Stefan's constant is $5.67 \times 10^{-5}$ erg $s^{-1}$ $cm^{-2}K^{-4}$. Write down its value in SI units.
2. Name at least seven physical quantities whose dimensions are $ML^2T^{-2}$
3. If m,v and c respectively denote mass,speed and velocity of light, then in the equation $m = m_0\left(1 - \frac{v^2}{c^2}\right)^{\frac{-1}{2}}$ , $m_0$ has the dimensions of ……
4. State the number of significant figures in the following:
   a) 0.007 b) $2.64 \times 10^{24}$
5. If $\left(P + \frac{a}{v^2}\right)(V - b) = RT$, where the symbols have their usual meanings, then $\left(\frac{a}{b}\right)$ has a dimension of ……..
6. The time of oscillation ( t) of a small drop of liquid under surface tension ($\sigma$ ) Prove dimensionally that $t \propto \sqrt{\frac{\rho r^3}{\sigma}}$ .
7. A physical quantity Q is given by $Q = \frac{A^2 B^{\frac{3}{2}}}{c^4 D^{\frac{1}{2}}}$
   The percentage error in A ,B ,C,D are 1%, 2% , 4%, 2% respectively. Find the percentage error in Q.
8. If $x = at + bt^2$ , Where x is in metre and t in hour, What will be the unit of a and b
9. The wavelength associated with a moving particle depends upon its mass m, its velocity v and Planck's constant h.Show dimensionally the relationship between them.
10. Check whether equation $F.S = \frac{1}{2}mv^2 - \frac{1}{2}mu^2$ is dimensionally correct, Where m is the mass of the body v is its final velocity , u its initial velocity , f is the force applied and S is the distance travelled.