

## Daily Practice Problems

### Unit Conversion

Q1) Equivalence of 1-Watt Hour in SI Unit.

Q2) Express Young's Modulus of steel in dyne/cm<sup>3</sup>

Given, Young's Modulus of steel is  $19 \times 10^{10} \text{ N/m}^2$ .

Q3) The Density of Mercury is  $13600 \text{ kg m}^{-3}$

Its value in CGS System is:

- a)  $13.6 \text{ g cm}^{-3}$  b)  $1360 \text{ g cm}^{-3}$  c)  $136 \text{ g cm}^{-3}$  d)  $1.36 \text{ g cm}^{-3}$

### Dimensions

Q4) Dimensions of Boltzmann's Constant is \_\_\_\_\_.

Given, Boltzmann's Constant =  $1.38 \times 10^{-23} \text{ m}^2 \text{ kg s}^{-2} \text{ K}^{-1}$

Q5) Dimensional Formulae of the Universal Gravitational Constant.

Q6) Dimensional Formulae of the Thermal Conductivity k

Given relation,  $Q = k \frac{A(\theta_2 - \theta_1)t}{d}$ .

Q7) Dimensional Formulae for surface tension S.

Given,  $S = \rho g r h/2$

Q8) Find the Dimensions of the Potential and then the Capacitance.

Given,  $E = Vit$  and  $Q = CV$

Q9) The Dimensions  $[ML^{-1}T^{-2}]$  may correspond to \_\_\_\_\_.

Q10) The time dependence of a physical quantity P is given by

$$P = P_0 e^{-at^2}$$

Where a is a constant; t is time.

The constant a is

- a) Dimensionless
- b) Has dimensions of P
- c) Has dimensions of  $[T]^{-2}$
- d) Has dimensions of  $[T]^2$