# Unit, Dimension and Measurement

1. Dimensional formula of heat energy is
   (1) $ML^2T^{-2}$        (2) $MLT^{-1}$
   (3) $M^0L^0T^{-2}$     (4) None of these

2. If $u_1$ and $u_2$ are the units selected in two system of measurement and $n_1$ and $n_2$ their numerical values, then
   (1) $n_1u_1 = n_2u_2$
   (2) $n_1/u_1 = n_2/u_2$
   (3) $n_1n_2 = u_1u_2$
   (4) $(n_1 + u_1) = (n_2 + u_2)$

3. Calculate the dimensional formula of energy from the equation $E = \dfrac{1}{2}mv^2$
   (1) $[M^0L^2T^2]$      (2) $[M^1L^2T^{-2}]$
   (3) $[M^0L^2T^{-2}]$    (4) $[M^0L^{-2}T^{-2}]$

4. A dimension less quantity-
   (1) Never has a unit  (2) Always has a unit
   (3) May have a unit  (4) Does not exist

5. A physical quantity is measured and the result is expressed as $nu$ where $u$ is the unit used and $n$ is the numerical value. If the result is expressed in various units then
   (1) $n \propto$ size of $u$     (2) $n \propto u^2$
   (3) $n \propto \sqrt{u}$         (4) $n \propto \dfrac{1}{u}$

6. Which of the following is not one of the seven fundamental SI units?
   (1) Henry         (2) Ampere
   (3) Candela      (4) Mole

7. Which of the following is usually a derived quantity?
   (1) Mass          (2) Velocity
   (3) Length       (4) Time

8. The value of density of mercury in CGS system is 13.56 gm cm$^{-3}$. Its value in SI system is:
   (1) 135.6 kg m$^{-3}$    (2) 13.56 kg m$^{-3}$
   (3) 1.356 kg m$^{-3}$    (4) 13560 kg m$^{-3}$

9. The dimensional formula for pressure is:
   (1) $[MLT^{-1}]$       (2) $[ML^2T^{-2}]$
   (3) $[ML^{-1}T^{-2}]$    (4) $[ML^{-1}T^1]$

10. Entries in column I are representing physical quantities whereas entries in column II are representing dimensions. Match the columns.

| Column I | | Column II |
|---|---|---|
| (A) Angle | (P) | $M^1L^2T^{-3}$ |
| (B) Power | (Q) | $M^0L^0T^0$ |
| (C) Work | (R) | $M^1L^2T^{-2}$ |
| (D) Torque | (S) | $M^1L^1T^{-2}$ |

   (1) A-Q, B-P, C-R, D-R
   (2) A-Q, B-P, C-S, D-R
   (3) A-P, B-Q, C-S, D-R
   (4) A-P, B-S, C-R, D-Q