Choose the correct answer.

1. The two shorter sides of right angled triangle are 5 cm and 12 cm. Let θ denote the angle opposite to the 5 cm side. Find $\sin\theta$,

(1) $\frac{5}{13}$ (2) $\frac{5}{12}$ (3) $\frac{7}{12}$ (4) $\frac{7}{14}$

2. Find the value of $\cos 106^0$

(1) $\frac{6}{25}$ (2) $-\frac{7}{25}$ (3) $\frac{25}{4}$ (4) $\frac{3}{25}$

3. The value of $1+\frac{1}{4}+\frac{1}{16}+\frac{1}{64}+$ .....upto ∞ , is :

(1) $\frac{5}{4}$ (2) $\frac{4}{3}$ (3) $\frac{6}{5}$ (4) $\frac{7}{6}$

4. If $x = at + bt^2$, where x is the distance travelled by a body in kilometers while t is the time in seconds, then the unit of b is :

(1) Km/s (2) Km/s^2 (3) Km-s (4) $Km-s^2$

5. The time period T of a small drop of liquid (due to surface tension) depends on density ρ, radius r and surfacet tensions S.The relation is:

(1) $T \propto (\rho r^3 / S)^{1/2}$ (2) $T \propto \rho r S$

(3) $T \propto \rho r / S$ (4) $T \propto (S / \rho r)$

6. The time dependence of a physical qunatity p is given by $P = P_0\exp(-\alpha t^2)$ [where α is a constant and t is time]. The constant α :

(1) is dimensionless (2) has dimensions $[T^{-2}]$

(3) has dimensions $[T^2]$ (4) has dimensions of P

7. $\upsilon = at + \frac{b}{t+c}$. Find the dimensions of a, where t is time and υ is velocity :

(1) L^1T^{-1} (2) T^1 (3) L (4) L^1T^{-2}

8. The equation of state of some gases can be expressed as;

$$\left(P + \frac{a}{V^2}\right)(V - b) = RT$$

where P is the pressure, V the volume, T the absolute temperature and a, b, R are constants. The dimensions of 'a' are:

(1) $[ML^5T^{-2}]$ (2) $[ML^{-1}T^{-2}]$

(3) $[L^3]$ (4) $[L^6]$

9. Dimensions of $\sin^{-(1/2)}$ are :

(1) $\frac{1}{T}$ (2) T (3) $M^1L^1T^{-2}$ (4) $M^0L^0T^0$

10. The potential energy of a particle varies with distance x from a fixed points as $U = \frac{A\sqrt{x}}{x+B}$ where A and B are constnats. The dimensions of AB is:

(1) $[ML^{3/2}T^{-2}]$ (2) $[ML^{7/2}T^{-2}]$

(3) $[M^2L^{5/2}T^{-2}]$ (4) Dimensionless