1. 1 ns is defined as [IPUEE 08]

(a) 10^{-9} s of Kr-clock of 1650763.73 oscillations

(b) 10^{-9} s of Kr-clock of 652189.63 oscillations

(c) 10^{-9} s of Cs-clock of 1650763.73 oscillations

(d) 10^{-9} s of Cs-clock of 9192631770 oscillations

2. If the unit of force is 1 kilonewton, the length is 1 km and time 100 s, what will be the unit of mass ?

(a) 1,000 kg (b) 1 kg

(c) 10,000 kg (d) 100 kg [IPUEE 08]

3. Out of the following four dimensional quantities, which one qualifies to be called a dimensional constant ?

(a) Acceleration due to gravity

(b) Surface tension of water

(c) Weight of a standard kilogram mass

(d) The velocity of light in vacuum. [IPUEE 06]

4. The dimensions of torque are

(a) $[ML^2T^2]$ (b) $[ML^2T^{-2}]$

(c) $[M^2L^2T^{-2}]$ (d) $[MLT^{-1}]$ [DCE 00]

5. $[ML^2T^{-2}]$ are dimensions of

(a) force (b) moment of force

(c) momentum (d) power [DCE 04]

6. The dimensions of Planck's constant are

(a) $[M^2L^2T^{-2}]$ (b) $[MLT^{-2}]$

(c) $[ML^2T^{-2}]$ (d) $[ML^2T^{-1}]$ [DPM 01 ; DCE 07]

7. The dimensions of the quantity $h\nu / c$, where h is Planck's constant, ν is the frequency and c is the velocity of light are

(a) $[MT^{-1}]$ (b) $[MLT^{-1}]$

(c) $[MLT^{-2}]$ (d) $[ML^2T^2]$ [IPUEE 12]

8. The dimensions of strain are

(a) L (b) L^2

(c) it is dimensionless (d) $ML^{-1}T^{-2}$ [IPUEE 14]

9. Dimensions of bulk modulus are

(a) $[M^{-1}LT^{-2}]$ (b) $[ML^{-1}T^{-2}]$

(c) $[ML^{-2}T^{-2}]$ (d) $[M^2L^2T^{-1}]$ [DCE 07]

10. The unit of a in van der Waal's gas equation is

(a) atm $L^{-2}mol^2$ (b) atm L^2per mol

(c) atm $L^{-1}mol^{-2}$ (d) atm L^2mol^{-2} [DCE 97]

11. The equation of state of the gas is expressed as $\left(P+\frac{a}{V^2}\right)(V-b)=nRT$, where P = pressure, V = volume, T = temperature and n, a, b, R are constants. The dimensions of a will be

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

(b) $[L^{-3}]$ (d) $[L^6]$ [IPUEE 09]

12. The force F is given in terms of time t and displacement x by the equation $F = A\cos Bx + C\sin Dt$. The dimensional formula of D/B is

(a) $[M^0L^0T^0]$ (b) $[M^0L^0T^{-1}]$

(c) $[M^0L^{-1}T^0]$ (d) $[M^0LT^{-1}]$ [IPUEE 11]

13. In the relation, $y = r\sin(\omega t + kx)$, the dimensional formula for kx or ωt is same as

(a) r/ω (b) r/y

(c) $\omega t/r$ (d) $yr/\omega t$ [DCE 03]

14. Which of the following quantities can be written in SI units in $kgm^2A^{-2}s^{-3}$?

(a) Resistance (b) Inductance

(c) Capacitance (d) Magnetic flux [DCE 07]

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

(a) $T \propto \left(\frac{\rho r^3}{S}\right)^{1/2}$ (b) $T \propto \rho rS$

(c) $T \propto \frac{\rho r}{S}$ (d) $T \propto \frac{S}{\rho r}$

16. Which one of the following pairs of quantities has the same dimension ?

(a) force and work done

(b) momentum and impulse

(c) pressure and force

(d) surface tension and stress. [DCE 09]

17. If $L = 2.331$ cm, $B = 2.1$ cm, then $L + B = ?$

(a) 4.431 cm (b) 4.43 cm

(c) 4.4 cm (d) 4 cm [DCE 03]

18. If error in radius is 3%, what is error in volume of sphere ?

(a) 3% (b) 27% (c) 9% (d) 6% [DCE 06]

19. In an experiment, on the measurement of g, using a simple pendulum, the time period was measured with an accuracy of 0.2% while the length was measured with an accuracy of 0.5%. The percentage accuracy in the value of g thus obtained is

(a) 0.7% (b) 0.1% (c) 0.25% (d) 0.9% [DCE 07]