Physicsaholics

DPP – 1 (Unit & Dimension)

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Q 1. Which of the following physical quantities has neither dimensions nor unit?
(Hint:- f = μN; where, μ = coefficient of friction, f = friction force & N = Normal force)
(a) Angle
(b) Luminous intensity
(c) Coefficient of friction
(d) Current

Q 2. Dimensional formula for coefficient of viscosity (η)[use $F = 6\pi\eta r v$ (r=radius; v=velocity; F=viscous force]:
(a) $ML^{-2}T^{-1}$
(b) $M^{-1}L^{1}T^{-1}$
(c) $M^{1}L^{1}T^{-2}$
(d) $ML^{-1}T^{-1}$

Q 3. The dimensions of radian per second are:
(a) $[M^0L^0T^0]$
(b) $[M^0L^0T^1]$
(c) $[M^0L^0T^{-1}]$
(d) $[M^0L^2T^{-1}]$

Q 4. The dimensional formula of radius of gyration is:
(a) $[M^0 L^0T^0]$
(b) $[M^0 L^0 T]$
(c) $[M^0 L T^0]$
(d) $[M L T^{-1}]$

Q 5. From the following pairs of physical quantities, in which group dimensions are not same:
[Hint:- Linear momentum = mass × velocity, Torque = Force × perpendicular distance, Impulse = Change in momentum]
(a) Linear Momentum and impulse
(b) Torque and energy
(c) Energy and work
(d) Light year and minute

Q 6. The dimensional formula for Planck's constant (h) is
(Hint:- Unit of planks constant = J-sec)
(a) $[ML^{-2}T^{-3}]$
(b) $[M^0L^2T^{-2}]$
(c) $[ML^2T^{-1}]$
(d) $[ML^{-2}T^{-2}]$

Q 7. An atmosphere:
(a) is a unit of pressure
(b) is a unit of force
(c) gives an idea of the composition of air
(d) is the height above which there is no atmosphere

Q 8. The dimensions of wavelength (λ) is:
(Wavelength = Distance travelled by wave in one time period)
(a) $[M^0 L^0 T^0]$ (b) $[M^0 L T^0]$
(c) $[M^0 L^{-1} T^0]$ (d) none of these

Q 9. State which of the following is correct?
(Hint:- When a charge q is accelerated by a Voltage V then its energy = qV)
(a) joule = coulomb × volt (b) joule = coulomb/volt
(c) joule = volt + coulomb (d) joule = volt/coulomb

Q 10. Of the following quantities, which one has dimensions different from the remaining three?
(Hint:- Angular Momentum = mass × velocity × perpendicular distance,
& When a charge q is accelerated by a voltage V then its energy = qV)
(a) Energy per unit volume
(b) Force per unit area
(c) Product of voltage and charge per unit volume
(d) Angular momentum

Q 11. The dimensions of frequency is:
(Hint:- frequency (f) = $\frac{1}{T}$; T = Time period)
(a) $[T^{-1}]$ (b) $[M^0L^0T^0]$
(c) $[M^0L^0T^{-2}]$ (d) None of these

Q 12. Young's modulus (Y) of a material has the same unit as
(Y = $\frac{Stress}{Strain}$; where, Stress = $\frac{Force}{Area}$ & Strain = $\frac{Change\ in\ length}{original\ length}$)
(a) Pressure (b) Strain
(c) Density (d) Force

Q 13. The unit of impulse is the same as that of
(Hint:- Impulse = Force × time, Momentum = mass × velocity, Power = Energy per unit time)
(a) Energy (b) Power
(c) Momentum (d) Velocity

Answer Key

Q.1 c	**Q.2 d**	**Q.3 c**	**Q.4 c**	**Q.5 d**
Q.6 c	**Q.7 a**	**Q.8 b**	**Q.9 a**	**Q.10 d**
Q.11 a	**Q.12 a**	**Q.13 c**		