Yakeen NEET 2.0 2026

Physics By Manish Raj Sir

Units and Measurements

DPP: 2

Q1 A physical quantity has the dimensions $[M^1L^2T^{-3}]$. Which of the following could it represent?

(A) Power (B) Force

(C) Work (D) Energy

Q2 The speed of light in a medium is v. The refractive index of the medium is n. If the dimensions of n are $[M^0L^0T^0]$, which of the following is the correct dimensional formula for the speed of light v ?

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

(B) $[M^1L^1T^{-1}]$

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

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

Q3 Match the columns I and II.

Column- I		Column-II	
(a)	Angle	(p)	ML^2T^{-3}
(b)	Power	(q)	$M^0L^0T^0$
(c)	Work	(r)	ML^2T^{-2}
(d)	Force	(s)	MLT^{-2}

(A) (a) → (r); (b) → (s); (c) → (p); (d) → (r)

(B) (a) → (q); (b) → (p); (c) → (r); (d) → (s)

(C) (a) → (r); (b) → (p); (c) → (s); (d) → (q)

(D) (a) → (q); (b) →(r); (c) → (p); (d) → (s)

Q4 Match list I with List II:

List-I		List-II	
(a)	Torque	I.	$kg\ m^{-1}s^{-2}$
(b)	Energy density	II.	$kg\ ms^{-1}$
(c)	Pressure gradient	III.	$kg\ m^{-2}s^{-2}$
(d)	Impulse	IV.	$kg\ m^2s^{-2}$

Choose the correct answer from the options given below:

(A) a - IV, b - I, c - III, d - II

(B) a - I, b - IV, c - III, d - I

(C) a - IV, b - III, c - I, d - II

(D) a - IV, b - I, c - II, d - III

Q5 If force (F), velocity (V) and time (T) are taken as fundamental units, then the dimensions of mass are:

(A) $[FVT^{-1}]$

(B) $[FVT^{-2}]$

(C) $[F^{-1}VT^{-2}]$

(D) $[FV^{-1}T]$

Q6 If momentum (p), area (A) and time (T) are taken to be fundamental quantities, then energy has the dimensional formula:

(A) $pA^{-1}T^1$

(B) p^2AT

(C) $pA^{-1/2}T$

(D) $pA^{1/2}T^{-1}$

Q7 If energy (E), velocity (V) and time (T) are chosen as the fundamental quantities, the dimensional formula of surface tension will be:

(A) $[EV^{-1}T^{-2}]$

(B) $\left[EV^{-2}T^{-2}\right]$
(C) $\left[E^{-2}V^{-1}T^{-3}\right]$
(D) $\left[EV^{-2}T^{-1}\right]$

Q8 The force F on a sphere of radius $'a'$ moving in a medium with velocity $'v'$ is given by $F = 6\pi\eta av$. The dimensions of η are:
(A) $\left[ML^{-1}T^{-1}\right]$
(B) $\left[MT^{-1}\right]$
(C) $\left[MLT^{-2}\right]$
(D) $\left[ML^{-3}\right]$

Q9 The equation of a wave is given by $y = A\sin\omega\left\{\frac{x}{v} - k\right\}$; where ω is the angular velocity and v is the linear velocity. The dimensions of k is:
(A) LT
(B) T
(C) T^{-1}
(D) T^2

Q10 The expression for the force is given by $F = b + \frac{c}{t^3}$ where 'b' and 'c' are some physical quantities and 't' is the time. then the dimensions of 'c' are;
(A) $\left[M^0LT\right]$ (B) $\left[MLT^{-1}\right]$
(C) $\left[MLT^{-2}\right]$ (D) [MLT]

Q11 A force 'F' is given as $F = Pt^{-1} + Qt$, where 't' denotes time. Then, the unit of 'P' must be same as that of_____.
(A) Displacement (B) Velocity
(C) Acceleration (D) Momentum

Q12 The dimensions of universal gravitational constant are
(A) $M^2L^2T^{-2}$
(B) $M^{-1}L^3T^{-2}$
(C) $ML^{-1}T^{-2}$
(D) ML^2T^{-2}

Q13 Which of the following is the correct dimensional formula for Planck's constant h?
(A) $\left[M^1L^2T^{-1}\right]$
(B) $\left[M^1L^2T^{-2}\right]$
(C) $\left[M^0L^2T^{-1}\right]$
(D) $\left[M^0L^1T^{-1}\right]$

Q14 The dimensions of universal gas constant is
(A) $\left[ML^2T^{-2}\theta^{-1}\right]$
(B) $\left[M^2LT^{-2}\theta\right]$
(C) $\left[ML^3T^{-1}\theta^{-1}\right]$
(D) None of these

Q15 The quantities which have the same dimensions as those of solid angle are :
(A) strain and angle
(B) stress and angle
(C) strain and arc
(D) angular speed and stress

Q16 A dimensionless physical quantity _____.
(A) may have a unit
(B) always has a unit
(C) never has a unit
(D) does not exist

Q17 The dimensional formula of k in $y = \sin(kx)$ is (if x is the distance)
(A) $M^0L^0T^{-1}$
(B) $M^{-1}L^{-1}T^0$
(C) $M^0L^{-1}T^0$
(D) $M^0L^0T^0$

Q18 For $10^{(at+3)}$, if t is time, then the dimension of a is
(A) $\left[M^0L^0T^0\right]$
(B) $[M^0L^0T^1]$
(C) $\left[M^0L^0T^{-1}\right]$
(D) $\left[M^0L^{-1}T^0\right]$

Q19

In the relation: $y = a\cos(\omega t + Kx)$, the dimensional formula for Kx is same as that of: (Symbols have their usual meaning)

(A) a/ω

(B) a/y

(C) $\omega t/a$

(D) $ya/\omega t$

Q20 The velocity (v) of a particle depends upon the time (t) according to the equation:

$$v = \sqrt{ab} + bt + \frac{c}{d+t}.$$

The physical quantities which are represented by a, b, c and d, are in the following order:

(A) distance, distance, acceleration, time

(B) distance, acceleration, distance, time

(C) acceleration, distance, distance, time

(D) acceleration, acceleration, distance, time

Answer Key

Q1	(A)
Q2	(A)
Q3	(B)
Q4	(A)
Q5	(D)
Q6	(D)
Q7	(B)
Q8	(A)
Q9	(B)
Q10	(D)
Q11	(D)
Q12	(B)
Q13	(A)
Q14	(A)
Q15	(A)
Q16	(A)
Q17	(C)
Q18	(C)
Q19	(B)
Q20	(B)