

PYQSide

NEET UNITS AND MEASUREMENTS — DIMENSIONAL ANALYSIS AND ITS APPLICATIONS — PYQS

Max. Marks: 44

Questions: 11

Section A (MCQ)

Q.1 Consider that σ_s , k_B , b represents Stefan-Boltzmann constant, Boltzmann constant and Wien's displacement law constant, respectively. The dimension of $\sigma_s k_B^{-1} b$ is [RE-NEET (UG) 2026]

- (1) $[L^{-1}T^{-1}K^{-4}]$ (2) $[L^{-1}T^{-1}K^{-2}]$
(3) $[L^{-1}K^{-2}]$ (4) $[L^{-1}T^{-1}K^{-3}]$

Scan or tap for the full solution



Q.2 A force defined by $F = \alpha t^2 + \beta t$ acts on a particle at a given time t . The factor which is dimensionless, if α and β are constants, is: [NEET (UG) 2024]

- (1) $\beta t/\alpha$ (2) $\alpha t/\beta$ (3) $\alpha\beta t$ (4) $\alpha\beta/t$

Scan or tap for the full solution



Q.3 The potential energy of a particle moving along x-direction varies as $V = \frac{Ax^2}{\sqrt{x+B}}$. The dimensions of $\frac{A^2}{B}$ are: [RE-NEET (UG) 2024]

- (1) $[M^{3/2}L^{1/2}T^{-3}]$ (2) $[M^{1/2}LT^{-3}]$
(3) $[M^2L^{1/2}T^{-4}]$ (4) $[ML^2T^{-4}]$

Scan or tap for the full solution



Q.4 If force $[F]$, acceleration $[A]$ and time $[T]$ are chosen as the fundamental physical quantities. Find the dimensions of energy. [NEET (UG) 2021]

- (1) $[F][A^{-1}][T]$ (2) $[F][A][T]$
(3) $[F][A][T^2]$ (4) $[F][A][T^{-1}]$

Scan or tap for the full solution



Q.5 A physical quantity of the dimensions of length that can be formed out of c , G and $\frac{e^2}{4\pi\epsilon_0}$ is [c is velocity of light, G is the universal constant of gravitation and e is charge] [NEET 2017]

- (1) $c^2 \left[G \frac{e^2}{4\pi\epsilon_0} \right]^{1/2}$ (2) $\frac{1}{c^2} \left[G \frac{e^2}{4\pi\epsilon_0} \right]^{1/2}$
(3) $\frac{1}{c} G \frac{e^2}{4\pi\epsilon_0}$ (4) $\frac{1}{c^2} \left[G \frac{e^2}{4\pi\epsilon_0} \right]^{1/2}$

Scan or tap for the full solution



Q.6 Planck's constant (h), speed of light in vacuum (c) and Newton's gravitational constant (G) are three fundamental constants. Which of the following combinations of these has the dimension of length? [NEET 2016 (Phase 2)]

- (1) $\frac{\sqrt{hG}}{c^{3/2}}$ (2) $\frac{\sqrt{hG}}{c^{5/2}}$ (3) $\sqrt{\frac{hc}{G}}$ (4) $\sqrt{\frac{Gc}{h^{3/2}}}$

Scan or tap for the full solution



Q.7 If dimensions of critical velocity v_c of a liquid flowing through a tube are expressed as $[\eta^x \rho^y r^z]$ where η , ρ and r are the coefficient of viscosity of liquid, density of liquid and radius of the tube respectively, then the values of x , y and z are given by [AIPMT 2015]

- (1) $-1, -1, -1$ (2) $1, 1, 1$
(3) $1, -1, -1$ (4) $-1, -1, 1$

Scan or tap for the full solution



Q.8 If energy (E), velocity (V) and time (T) are chosen as the fundamental quantities, the dimensional formula of surface tension will be [AIPMT 2015 (Cancelled)]

- (1) $[EV^{-2}T^{-2}]$ (2) $[E^{-2}V^{-1}T^{-3}]$
(3) $[EV^{-2}T^{-1}]$ (4) $[EV^{-1}T^{-2}]$

Scan or tap for the full solution



Q.9 If force (F), velocity (V) and time (T) are taken as fundamental units, then dimensions of mass are [AIPMT 2014]

- (1) $[FVT^{-1}]$ (2) $[FVT^{-2}]$
(3) $[FV^{-1}T^{-1}]$ (4) $[FV^{-1}T]$

Scan or tap for the full solution



- Q.10** The density of a material in CGS system of units is 4 g cm^{-3} . In a system of units in which unit of length is 10 cm and unit of mass is 100 g, the value of density of material will be [AIPMT 2011 (Mains)]
- (1) 0.04 (2) 0.4 (3) 40 (4) 400

Scan or tap for the
full solution



- Q.11** The velocity v of a particle at time t is given by $v = at + \frac{b}{t+c}$, where a , b and c are constants. The dimensions of a , b and c are [AIPMT 2006]
- (1) $[L]$, $[LT]$ and $[LT^{-2}]$ (2) $[LT^{-2}]$, $[L]$ and $[T]$
 (3) $[L^2]$, $[T]$ and $[LT^{-2}]$ (4) $[LT^{-2}]$, $[LT]$ and $[L]$

Scan or tap for the
full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	2	2	3	3	4	1	3	1	4	3	2