

PYQSide

JEE MAIN UNITS AND MEASUREMENTS — DIMENSIONAL ANALYSIS AND ITS APPLICATIONS — PYQS

Max. Marks: 24

Questions: 6

Section A (MCQ)

Q.1 Consider the equation $H = \frac{x^p \epsilon^q E^r}{t^s}$

Where H = magnetic field intensity; E = electric field, ϵ = permittivity, x = distance, t = time

The values of p , q , r and s respectively are :

[JEE Main 2026 (Online) 8th April Evening Shift]

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

Scan or tap for the full solution



Q.2 The potential energy of a particle changes with distance x from a fixed origin as $V = \frac{A\sqrt{x}}{x+B}$, where A and B are constants with appropriate dimensions. The dimensions of AB are _____.

[JEE Main 2026 (Online) 6th April Morning Shift]

- (1) $[M^1 L^{5/2} T^{-2}]$ (2) $[M^{3/2} L^{5/2} T^{-2}]$
(3) $[M^1 L^2 T^{-2}]$ (4) $[M^1 L^{7/2} T^{-2}]$

Scan or tap for the full solution



Q.3 Match **List-I** with **List-II**.
where h (Planck's constant), G (gravitational constant) and c (speed of light in vacuum) as fundamental units.

List-I		List-II	
A.	Meter (L)	I.	$\sqrt{\frac{hc}{G}}$
B.	Second (S)	II.	$\sqrt{\frac{Gh}{c^5}}$
C.	Kilogram (M)	III.	$\sqrt{\frac{K^2 L^2 c^3}{Gh}}$
D.	Kelvin (K)	IV.	$\sqrt{\frac{Gh}{c^3}}$

Choose the correct answer from the options given below : [JEE Main 2026 (Online) 5th April Evening Shift]

- (1) A-II, B-IV, C-I, D-III (2) A-IV, B-II, C-I, D-III
(3) A-IV, B-I, C-II, D-III (4) A-III, B-I, C-II, D-IV

Scan or tap for the full solution



Q.4 Consider a modified Bernoulli equation.

$$\left(P + \frac{A}{Bt^2}\right) + \rho g(h + Bt) + \frac{1}{2}\rho V^2 = \text{constant}$$

If t has the dimension of time then the dimensions of A and B are _____, _____ respectively.

[JEE Main 2026 (Online) 21st January Morning Shift]

- (1) $[ML^0 T^{-1}]$ and $[M^0 L T]$
(2) $[ML^0 T^{-2}]$ and $[M^0 L T^{-1}]$
(3) $[ML^0 T^{-2}]$ and $[M^0 L T^{-2}]$
(4) $[ML^0 T^{-1}]$ and $[M^0 L T^{-1}]$

Scan or tap for the full solution



Q.5 The expression given below shows the variation of velocity (v) with time (t),

$$v = At^2 + \frac{Bt}{C+t}$$

The dimension of ABC is :

[JEE Main 2025 (Online) 29th January Morning Shift]

- (1) $[M^0 L^1 T^{-2}]$ (2) $[M^0 L^2 T^{-3}]$
(3) $[M^0 L^2 T^{-2}]$ (4) $[M^0 L^1 T^{-3}]$

Scan or tap for the full solution



Section B (Numerical)

Q.6 A ball of radius r and density ρ dropped through a viscous liquid of density σ and viscosity η attains its terminal velocity at time t , given by $t = A\rho^a r^b \eta^c \sigma^d$, where A is a constant and a , b , c and d are integers.

The value of $\frac{b+c}{a+d}$ is _____.

[JEE Main 2026 (Online) 23rd January Evening Shift]

Scan or tap for the full solution



ANSWER KEY

Section A (MCQ)

Ques.	1	2	3	4	5					
Ans.	1	4	2	4	2					

Section B (Numerical)

Ques.	6									
Ans.	1									