

JEE MAIN UNITS AND MEASUREMENTS — DIMENSIONS OF PHYSICAL QUANTITIES — PYQS

Max. Marks: 80

Questions: 20

Section A (MCQ) — 19 questions

Q.1 Match **List-I** with **List-II**.

List-I		List-II	
A.	Boltzmann constant	I.	$[M^{-1}L^3T^{-2}]$
B.	Stefan's constant	II.	$[ML^2T^{-1}]$
C.	Planck's constant	III.	$[ML^2T^{-2}K^{-1}]$
D.	Gravitational constant	IV.	$[ML^0T^{-3}K^{-4}]$

Choose the correct answer from the options given below : [JEE Main 2026 (Online) 6th April Evening Shift]

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

Scan or tap for the full solution



Q.2 L, C and R represents physical quantities inductance, capacitance and resistance respectively. The dimensional formula $M L^2 T^{-4} A^{-2}$ corresponds to _____.

[JEE Main 2026 (Online) 5th April Morning Shift]

- (1) $\frac{R}{\sqrt{LC}}$ (2) $\frac{R}{LC}$ (3) $\frac{C}{\sqrt{LR}}$ (4) $\frac{1}{R} \sqrt{\frac{L}{C}}$

Scan or tap for the full solution



Q.3 The dimensional formula of $\frac{1}{2}\epsilon_0 E^2$ (ϵ_0 = permittivity of vacuum and E = electric field) is $M^a L^b T^c$. The value of $2a - b + c =$ _____.

[JEE Main 2026 (Online) 2nd April Morning Shift]

- (1) 0 (2) 1 (3) -1 (4) 2

Scan or tap for the full solution



Q.4 Dimensions of universal gravitational constant (G) in terms of Planck's constant (h), distance (L), mass (M) and time (T) are _____.

[JEE Main 2026 (Online) 2nd April Evening Shift]

- (1) $[hTLM^{-2}]$ (2) $[hT^{-1}LM^{-2}]$
(3) $[hTL^2M^{-2}]$ (4) $[h^{-1}T^{-1}LM^{-2}]$

Scan or tap for the full solution



Q.5 Match **List - I** with **List - II**.

List-I		List-II	
A.	Coefficient of viscosity	I.	$[ML^{-1}T^{-2}]$
B.	Surface tension	II.	$[ML^2T^{-2}]$
C.	Pressure	III.	$[ML^0T^{-2}]$
D.	Surface energy	IV.	$[ML^{-1}T^{-1}]$

Choose the **correct** answer from the options given below :

[JEE Main 2026 (Online) 28th January Evening Shift]

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

Scan or tap for the full solution



Q.6 Match the **LIST-I** with **LIST-II**

List-I		List-II	
A.	Magnetic induction	I.	$MLT^{-2}A^{-2}$
B.	Magnetic flux	II.	$ML^2T^{-2}A^{-2}$
C.	Magnetic permeability	III.	$ML^0T^{-2}A^{-1}$
D.	Self inductance	IV.	$ML^2T^{-2}A^{-1}$

Choose the correct answer from the options given below:

[JEE Main 2026 (Online) 24th January Morning Shift]

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

Scan or tap for the full solution



Q.7 Match the **LIST-I** with **LIST-II**

List-I		List-II	
A.	Spring constant	I.	$ML^2T^{-2}K^{-1}$
B.	Thermal conductivity	II.	ML^0T^{-2}
C.	Boltzmann constant	III.	$ML^2T^{-3}A^{-2}$
D.	Inductive reactance	IV.	$MLT^{-3}K^{-1}$

Choose the correct answer from the options given below:

[JEE Main 2026 (Online) 22nd January Morning Shift]

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

Scan or tap for the full solution



- Q.8** The dimension of $\sqrt{\frac{\mu_0}{\epsilon_0}}$ is equal to that of:
 (μ_0 = Vacuum permeability and ϵ_0 = Vacuum permittivity)

[JEE Main 2025 (Online) 7th April Evening Shift]

- (1) Voltage (2) Inductance
 (3) Resistance (4) Capacitance

Scan or tap for the full solution 

- Q.9** Match **List - I** with **List - II**.

List - I		List - II	
A.	Mass density	I.	$[ML^2T^{-3}]$
B.	Impulse	II.	$[MLT^{-1}]$
C.	Power	III.	$[ML^2T^0]$
D.	Moment of inertia	IV.	$[ML^{-3}T^0]$

Choose the **correct** answer from the options given below : [JEE Main 2025 (Online) 7th April Evening Shift]

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

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- Q.10** In an electromagnetic system, the quantity representing the ratio of electric flux and magnetic flux has dimension of $M^p L^q T^r A^s$, where value of 'Q' and 'R' are

[JEE Main 2025 (Online) 4th April Morning Shift]

- (1) (3, - 5) (2) (-2, 1) (3) (-2, 2) (4) (1, - 1)

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- Q.11** In an electromagnetic system, a quantity defined as the ratio of electric dipole moment and magnetic dipole moment has dimension of $[M^p L^q T^r A^s]$. The values of P and Q are :

[JEE Main 2025 (Online) 4th April Evening Shift]

- (1) -1, 0 (2) 0, - 1 (3) -1, 1 (4) 1, - 1

Scan or tap for the full solution 

- Q.12** Match the **LIST-I** with **LIST-II**

List - I		List - II	
A.	Gravitational constant	I.	$[LT^{-2}]$
B.	Gravitational potential energy	II.	$[L^2T^{-2}]$
C.	Gravitational potential	III.	$[ML^2T^{-2}]$
D.	Acceleration due to gravity	IV.	$[M^{-1}L^3T^{-2}]$

Choose the correct answer from the options given below: [JEE Main 2025 (Online) 3rd April Morning Shift]

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

Scan or tap for the full solution 

- Q.13** Match the **LIST-I** with **LIST-II**

LIST-I		LIST-II	
A.	Boltzmann constant	I.	ML^2T^{-1}
B.	Coefficient of viscosity	II.	$MLT^{-3}K^{-1}$
C.	Planck's constant	III.	$ML^2T^{-2}K^{-1}$
D.	Thermal conductivity	IV.	$ML^{-1}T^{-1}$

Choose the correct answer from the options given below: [JEE Main 2025 (Online) 3rd April Evening Shift]

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

Scan or tap for the full solution 

- Q.14** Match **List I** with **List II**.

List - I		List - II	
A.	Coefficient of viscosity	I.	$[ML^0T^{-3}]$
B.	Intensity of wave	II.	$[ML^{-2}T^{-2}]$
C.	Pressure gradient	III.	$[M^{-1}LT^2]$
D.	Compressibility	IV.	$[ML^{-1}T^{-1}]$

Choose the correct answer from the options given below: [JEE Main 2025 (Online) 2nd April Morning Shift]

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

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- Q.15** The equation for real gas is given by $\left(P + \frac{a}{V^2}\right)(V - b) = RT$, where P, V, T and R are the pressure, volume, temperature and gas constant, respectively. The dimension of ab^{-2} is equivalent to that of : [JEE Main 2025 (Online) 2nd April Morning Shift]

- (1) Compressibility (2) Planck's constant
 (3) Energy density (4) Strain

Scan or tap for the full solution 

- Q.16** If μ_0 and ϵ_0 are the permeability and permittivity of free space, respectively, then the dimension of $\left(\frac{1}{\mu_0\epsilon_0}\right)$ is :

[JEE Main 2025 (Online) 2nd April Evening Shift]

- (1) T^2/L (2) L^2/T^2 (3) T^2/L^2 (4) L/T^2

Scan or tap for the
full solution



- Q.17** Given a charge q , current I and permeability of vacuum μ_0 . Which of the following quantity has the dimension of momentum ?

[JEE Main 2025 (Online) 2nd April Evening Shift]

- (1) qI/μ_0 (2) $q^2\mu_0I$ (3) $q\mu_0/I$ (4) $q\mu_0I$

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full solution



- Q.18** The pair of physical quantities not having the same dimensions is :

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

- (1) Angular momentum and Planck's constant
(2) Torque and energy
(3) Surface tension and impulse
(4) Pressure and Young's modulus

Scan or tap for the
full solution



- Q.19** Match **List - I** with **List - II**.

List - I		List - II	
A.	Angular Impulse	I.	$M^0 L^2 T^{-2}$
B.	Latent Heat	II.	$M L^2 T^{-3} A^{-1}$
C.	Electrical resistivity	III.	$M L^2 T^{-1}$
D.	Electromotive force	IV.	$M L^3 T^{-3} A^{-2}$

Choose the correct answer from the options given below:

[JEE Main 2025 (Online) 28th January Evening Shift]

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

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Section B (Numerical) — 1 question

- Q.20** In a measurement, it is asked to find modulus of elasticity per unit torque applied on the system. The measured quantity has dimension of $[M^a L^b T^c]$. If $b = -3$, the value of c is _____.

[JEE Main 2025 (Online) 28th January Morning Shift]

Scan or tap for the
full solution



ANSWER KEY

Section A (MCQ) — 19 questions

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	3	1	2	2	2	4	4	3	4	4	2
Ques.	12	13	14	15	16	17	18	19			
Ans.	1	1	3	3	2	4	3	3			

Section B (Numerical) — 1 question

Ques.	20										
Ans.	0										