

PART 1 - PHYSICS

Topic : Units and measurements

SECTION-A : (Maximum Marks : 12)

This section contains **THREE** questions.

Each question has **FOUR** options (A), (B), (C) and (D). **ONE OR MORE THAN ONE** of these four option(s) is(are) correct answer(s).

For each question, choose the option(s) corresponding to (all) the correct answer(s).

Answer to each question will be evaluated according to the following marking scheme :

Full Marks : +4 ONLY if (all) the correct option(s) is(are) chosen;

Partial Marks : +3 If all the four options are correct but ONLY three options are chosen;

Partial Marks : +2 If three or more options are correct but ONLY two options are chosen, both of which are correct;

Partial Marks : +1 If two or more options are correct but ONLY one option is chosen and it is a correct option;

Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered);

Negative Marks : -1 In all other cases.

For example, in a question, if (A), (B) and (D) are the ONLY three options corresponding to correct answers, then choosing ONLY (A), (B) and (D) will get +4 marks; choosing ONLY (A) and (B) will get +2 marks; choosing ONLY (A) and (D) will get +2 marks; choosing ONLY (B) and (D) will get +2 marks; choosing ONLY (A) will get +1 mark; choosing ONLY (B) will get +1 mark; choosing ONLY (D) will get +1 mark; choosing no option (i.e. the question is unanswered) will get 0 marks; and choosing any other combination of options will get -1 marks.

1. Length, breadth and thickness of a strip having a uniform cross section are measured to be 10.5 cm, 0.05 mm, and 6.0 μm , respectively. Which of the following option(s) give(s) the volume of the strip in cm^3 with correct significant figures: [JEE Advanced 2025 Paper 1]

(A) 3.2×10^{-5} (B) 32.0×10^{-6} (C) 3.0×10^{-5} (D) 3×10^{-5}

Scan or tap for the full solution 

2. A temperature difference can generate e.m.f. in some materials. Let S be the e.m.f. produced per unit temperature difference between the ends of a wire, σ the electrical conductivity and κ the thermal conductivity of the material of the wire. Taking M, L, T, I and K as dimensions of mass, length, time, current and temperature, respectively, the dimensional formula of the quantity $Z = \frac{S^2 \sigma}{\kappa}$ is: [JEE Advanced 2025 Paper 2]

(A) $[M^0 L^0 T^0 I^0 K^0]$ (B) $[M^0 L^0 T^0 I^0 K^{-1}]$ (C) $[M^1 L^2 T^{-2} I^{-1} K^{-1}]$ (D) $[M^1 L^2 T^{-4} I^{-1} K^{-1}]$

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Space for Rough Work

3. A dimensionless quantity is constructed in terms of electronic charge e , permittivity of free space ϵ_0 , Planck's constant h , and speed of light c . If the dimensionless quantity is written as $e^\alpha \epsilon_0^\beta h^\gamma c^\delta$ and n is a non-zero integer, then $(\alpha, \beta, \gamma, \delta)$ is given by

[JEE Advanced 2024 Paper 1]

- (A) $(2n, -n, -n, -n)$ (B) $(n, -n, -2n, -n)$ (C) $(n, -n, -n, -2n)$ (D)

$(2n, -n, -2n, -2n)$

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full solution



Space for Rough Work

SECTION-B : (Maximum Marks : 12)

This section contains **THREE** questions.

The answer to each question is a **NUMERICAL VALUE**.

For each question, enter the correct numerical value of the answer (in decimal notation, truncated / rounded-off to the **SECOND DECIMAL PLACE**; e.g. 6.25, 7.00, -0.33, -.30, 30.27, -127.30) in the place designated to enter the answer.

Answer to each question will be evaluated according to the following marking scheme :

Full Marks : +4 If ONLY the correct answer is entered;

Zero Marks : 0 In all other cases.

4. In a new system of units, the units of mass, length, time and current are 5 kg, 5 m, 5 s and 5 A, respectively. If μ_0 and ϵ_0 are the permeability and permittivity of free space, respectively, then in this new system of units, the magnitude of one SI unit of $\sqrt{\mu_0/\epsilon_0}$, is:

[JEE Advanced 2026 Paper 2]

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5. A single slit diffraction experiment is performed to determine the slit width using the equation, $\frac{bd}{D} = m\lambda$, where b is the slit width, D the shortest distance between the slit and the screen, d the distance between the m^{th} diffraction maximum and the central maximum, and λ is the wavelength. D and d are measured with scales of least count of 1 cm and 1 mm, respectively. The values of λ and m are known precisely to be 600 nm and 3, respectively. The absolute error (in μm) in the value of b estimated using the diffraction maximum that occurs for $m = 3$ with $d = 5$ mm and $D = 1$ m is ____

[JEE Advanced 2025 Paper 1]

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6. The dimensions of a cone are measured using a scale with a least count of 2 mm. The diameter of the base and the height are both measured to be 20.0 cm. The maximum percentage error in the determination of the volume is ____.

[JEE Advanced 2024 Paper 2]

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JEE ADVANCED UNITS AND MEASUREMENTS —
PYQS

Test Pattern : JEE (Advanced)

ANSWER KEY

SECTION-A																													
Ques.	1	2	3																										
Ans.	D	B	A																										

SECTION-B													
Ques.	4	5	6										
Ans.	25	75 to 79	3										