

PART 1 - PHYSICS

Topic : Units and measurements

SECTION-A : (Maximum Marks : 8)

This section contains **TWO** questions.

Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is the correct answer.

For each question, choose the option corresponding to the correct answer.

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

Full Marks : +4 If **ONLY** the correct option is chosen;

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

Negative Marks : -1 In all other cases.

1. 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) $[M^1 L^2 T^{-4} I^{-1} K^{-1}]$

Scan or tap for the full solution



2. 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)

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

Scan or tap for the full solution



Space for Rough Work

**JEE ADVANCED UNITS AND MEASUREMENTS —
DIMENSIONAL ANALYSIS AND ITS APPLICATIONS —
PYQS**

Test Pattern : **JEE (Advanced)**

ANSWER KEY

SECTION-A

[illegible]