

PART 1 - MATHEMATICS

Topic : Matrices

SECTION-A : (Maximum Marks : 4)

This section contains **ONE** question.

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. Consider the matrix

$$P = \begin{pmatrix} 2 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 3 \end{pmatrix}.$$

Let the transpose of a matrix X be denoted by X^T . Then the number of 3×3 invertible matrices Q with integer entries, such that

$$Q^{-1} = Q^T \text{ and } PQ = QP,$$

is

(A) 32

(B) 8

(C) 16

(D) 24

[JEE Advanced 2025 Paper 1]

Scan or tap for the
full solution



Space for Rough Work

JEE ADVANCED MATRICES — SPECIAL MATRICES: IDEMPOTENT, NILPOTENT, INVOLUTORY, ORTHOGONAL (JEE) — PYQS

Test Pattern : JEE (Advanced)

ANSWER KEY

SECTION-A

[illegible]