

PART 1 - MATHEMATICS

Topic : Matrices

SECTION-1 : (Maximum Marks : 3)

- 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 : +3 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

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(D) 24

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-1																											
Ques.	1																										
Ans.	C																										