

BOARD-PATTERN PRACTICE PAPER · CBSE CLASS 12

Matrices

Mathematics · Chapter 3 · Matches current CBSE blueprint · Each question PYQ-sourced where indicated

DATE _____	TOTAL MARKS 30	DURATION 60 min	MARKING As per board	TARGET ≥ 24/30
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GENERAL INSTRUCTIONS

- All questions are compulsory.
- Section A: 1-mark MCQs. Section B: 2-mark short answers. Section C: 3-mark long answers. Section D: case-based / 5-mark problem.
- Use of calculator is NOT permitted.
- Show full working for method marks; matrices must be written with correct order and brackets.
- Correct final answers without working may attract partial credit only.

Section A — MCQ (1 mark each)

4 MARKS · 6 MIN

- Q1.** A matrix with 12 elements can have how many possible orders? (a) 3 (b) 4 (c) 6 (d) 12 [PYQ 2018 Delhi]
- Q2.** For matrices A and B, $(AB)^T$ equals: (a) $A^T B^T$ (b) $B^T A^T$ (c) AB (d) BA [PYQ 2019 Delhi] **[1 mark]**
- Q3.** Every diagonal element of a skew-symmetric matrix is: (a) 1 (b) 0 (c) -1 (d) arbitrary [PYQ 2024 All India]
- Q4.** If A is 2×3 and B is 3×4 , the order of AB is: (a) 2×4 (b) 3×3 (c) 4×2 (d) not defined [PYQ 2022 Delhi] **[1 mark]**

Section B — Short Answer (2 marks each)

8 MARKS · 16 MIN

- Q5.** If $[[x + y, 2], [5, x - y]] = [[6, 2], [5, 2]]$, find x and y. [PYQ 2020 Delhi] **[2 marks]**
- Q6.** If $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$, compute AB. [PYQ 2023 All India] **[2 marks]**
- Q7.** Show that the matrix $A = \begin{bmatrix} 0 & 5 \\ -5 & 0 \end{bmatrix}$ is skew-symmetric. [PYQ 2022 All India] **[2 marks]**
- Q8.** If $3A = \begin{bmatrix} 6 & 9 \\ 3 & 12 \end{bmatrix}$, find the matrix A. [PYQ 2023 Delhi] **[2 marks]**

Section C — Long Answer (3 marks each)

12 MARKS · 24 MIN

- Q9.** Express the matrix $A = \begin{bmatrix} 3 & 5 \\ 1 & -1 \end{bmatrix}$ as the sum of a symmetric and a skew-symmetric matrix. [PYQ 2023 Delhi] **[3 marks]**
- Q10.** For $A = \begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 3 & 1 \end{bmatrix}$, verify that $(AB)^T = B^T A^T$. [PYQ 2019 All India] **[3 marks]**
- Q11.** Show that for any square matrix A, the matrix $A + A^T$ is symmetric and $A - A^T$ is skew-symmetric. [PYQ 2020 Delhi] **[3 marks]**
- Q12.** If $A = \begin{bmatrix} 2 & 0 \\ 0 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 1 \\ 0 & 1 \end{bmatrix}$, compute AB and BA and state whether $AB = BA$. [PYQ 2022 All India] **[3 marks]**

Section D — Case-Based / Inverse (6 marks total)

6 MARKS · 14 MIN

- Q13.** Using elementary ROW operations, find the inverse of $A = \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}$, and verify your answer by computing $A \cdot A^{-1}$. [PYQ 2019 All India] **[5 marks]**
- Q14.** A square matrix A satisfies $A^2 = A$ and is invertible. Using the inverse, show that A must equal the identity matrix I. [PYQ 2024 Delhi] **[1 mark]**

Marking scheme & model answers — see companion Answer Key PDF · all PYQs traceable to actual CBSE papers · readyforboards.com · +91 70330 05444