# MERIT LEADERS DIAGNOSTIC TEST 2026

**Subject:** MATHS | **Chapter 1:** Matrices & Determinants (Set A)

Time: 45 Mins | Max Marks: 25

---

## Part I: Multiple Choice Questions (5 x 1 = 5 Marks)

1. If $|\text{adj}(\text{adj } A)| = |A|^9$, then the order of the square matrix A is:

a) 3   b) 4   c) 2   d) 5

*[Source: March 2025 PYQ; Textbook Vol 1, Ex 1.8 Q1]*

2. If $A = \begin{bmatrix} 2 & 0 \\ 1 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 4 \\ 2 & 0 \end{bmatrix}$, then $|\text{adj}(AB)| = ?$

a) -40   b) -80   c) -60   d) -20

*[Source: March 2023 PYQ]*

3. The rank of the matrix $\begin{bmatrix} 1 & 2 & 3 & 4 \\ 2 & 4 & 6 & 8 \\ -1 & -2 & -3 & -4 \end{bmatrix}$ is:

a) 1   b) 2   c) 4   d) 3

## Part II: Very Short Answer (3 x 2 = 6 Marks)

6. Find the rank of the matrix $\begin{bmatrix} -1 & 3 \\ 4 & -7 \end{bmatrix}$.

7. Find the inverse of the matrix $\begin{bmatrix} -2 & 4 \\ 1 & -3 \end{bmatrix}$.

## Part III: Short Answer (3 x 3 = 9 Marks)

9. Solve by Matrix Inversion: $2x + 5y = -2$, $x + 2y = -3$.

10. If $\text{adj}(A) = \begin{bmatrix} 0 & -2 & 0 \\ 6 & 2 & -6 \\ -3 & 0 & 6 \end{bmatrix}$, find $A^{-1}$.

## Part IV: Detailed Answer (2 x 5 = 10 Marks)

12. **(Critical Application)** A boy is walking along the path $y = ax^2 + bx + c$ through points (-6, 8), (-2, -12), and (3, 8). He wants to meet his friend at P(7, 60). Will he meet him? Use **Gaussian Elimination**.

# MERIT LEADERS DIAGNOSTIC TEST 2026

**Subject:** MATHS | **Chapter 1:** Cramer's Rule & Consistency (Set B)

Time: 45 Mins | Max Marks: 25

---

## Part I: Multiple Choice Questions (5 x 1 = 5 Marks)

1. In a system of 3 equations, if $\Delta = 0$ and one of $\Delta x$, $\Delta y$, $\Delta z$ is non-zero, the system is:

a) Consistent & Unique    b) Inconsistent

4. If $A^{-1} = \begin{pmatrix} 5 & 3 \\ -2 & -1 \end{pmatrix}$, then $(A^T)^{-1} = ?$

## Part II: Very Short Answer (3 x 2 = 6 Marks)

6. Find the rank of $\begin{pmatrix} 2 & -4 \\ -1 & 2 \end{pmatrix}$.

8. Find the rank by minor method: $\begin{pmatrix} 1 & 2 & 3 \\ 2 & 1 & 4 \\ 3 & 0 & 5 \end{pmatrix}$

## Part III: Short Answer (3 x 3 = 9 Marks)

10. Find the inverse using **Gauss-Jordan Method**: $\begin{pmatrix} 2 & 1 & 1 \\ 3 & 2 & 1 \\ 2 & 1 & 2 \end{pmatrix}$

## Part IV: Detailed Answer (2 x 5 = 10 Marks)

12. **(Blueprint Question)** Solve by Cramer's Rule:

$x + y + z = 7$

$2x + 3y + 2z = 17$

$4x + 9y + z = 37$