THE O.P. GUPTA
ADVANCED MATH CLASSES

Alpha Test Series-1
(For Academic session 2025-26)

Class XII - Mathematics (041)
Topics - Matrices

For Video Solutions **CLICK HERE**

Max. Marks - 30
Time - 60 Minutes

Followings are of 2 Marks each (Q01-05).

Q01. Determine a matrix X such that $2A+3B+X=O$, where $A=\begin{pmatrix}7 & -2\\ -5 & 4\end{pmatrix}$ and $B=\begin{pmatrix}3 & 2\\ 1 & -5\end{pmatrix}$.

Q02. Let A be a 2×2 matrix, whose elements are given by $a_{ij}=\begin{cases}|i-2j|, \text{ if } i\neq j\\ 3i+j, \text{ if } i=j\end{cases}$.

Then find the value of x, where $x=4\left(\frac{a_{12}+a_{21}+a_{22}}{a_{11}}\right)$.

Q03. Find the value of $(b-a)^{c+d}$, if $\begin{bmatrix}2a+b & a-2b\\ 5c-d & 24\end{bmatrix}=\begin{bmatrix}4 & -3\\ 11 & 4c+3d\end{bmatrix}$.

Q04. For $A=\begin{bmatrix}-2 & 1\\ -1 & -1\end{bmatrix}$, the sum of the diagonal elements in A^{12} is $m\times(9)^n$; $m, n\in N$, $m<n$. Then write the value of $(m+n)$.

Q05. Show that the matrix B^TAB is symmetric matrix or skew-symmetric matrix, according as the matrix A is symmetric matrix or skew-symmetric matrix. [2×5 = 10

Followings are of 3 Marks each (Q06-07).

Q06. Find matrix A and B, if $A+B=\begin{bmatrix}1 & 1 & -1\\ 0 & 2 & 3\\ -2 & 0 & -3\end{bmatrix}$, $A+2B=\begin{bmatrix}-1 & 1 & -1\\ 4 & 0 & 5\\ 2 & -2 & -3\end{bmatrix}$.

Q07. Express the matrix $\begin{pmatrix}1 & 2 & 0\\ -3 & 1 & 6\\ 4 & -2 & 5\end{pmatrix}$ as the sum of a symmetric and a skew-symmetric matrix.

OR

Find the value of x, such that $\begin{bmatrix}x & 4 & -1\end{bmatrix}\begin{bmatrix}2 & 1 & -1\\ 1 & 0 & 0\\ 2 & 2 & 4\end{bmatrix}\begin{bmatrix}x\\ 4\\ -1\end{bmatrix}=O$, if $x\in Z$. [3×2 = 6

Following is of 4 Marks (Q08).

Q08. **PASSAGE BASED QUESTION :** Let $A=\left[a_{ij}\right]_{m\times n}$ and $B=\left[b_{ij}\right]_{m\times n}$ be two matrices.

Then $A+B$ is always of order $m\times n$ and it is given by $A+B=\left[a_{ij}+b_{ij}\right]_{m\times n}$.

Also if $A=\left[a_{ij}\right]_{m\times n}$ and $B=\left[b_{jk}\right]_{n\times p}$ are two matrices, then AB is of order $m\times p$.

Based on the information given above, answer the following questions.

(i) Find the matrix $A+B+C$, if $A=\begin{bmatrix}1 & 2 & -1\\ 0 & 3 & 4\end{bmatrix}$, $B=\begin{bmatrix}0 & -2 & 1\\ 1 & 3 & 5\end{bmatrix}$ and $C=\begin{bmatrix}-3 & 2 & 1\\ 3 & -6 & -7\end{bmatrix}$.

(ii) Imagine you have two matrices, one of dimension 3×3 and the other of dimension 3×2. Is it possible to add these matrices together? Explain your reasoning.

(iii) Let $A=\begin{bmatrix}1 & 2 & 6\\ 0 & 3 & 4\end{bmatrix}$ and $B=\begin{bmatrix}2 & -1\\ 6 & 97\end{bmatrix}$. In the product BA, write the pre-factor matrix.

(iv) Let $A=\begin{bmatrix}1 & 2 & -1\\ 3 & 0 & 5\end{bmatrix}\begin{bmatrix}-1 & 3 & 51\\ 49 & 6 & -9\\ 7 & -2 & 10\end{bmatrix}\begin{bmatrix}5\\ 6\\ 3\end{bmatrix}$. Write the order of matrix A. [1×4 = 4

Followings are of 5 Marks each (Q09-10).

Q09. Find the values of x, y, z if the matrix $A=\begin{pmatrix} 0 & 2y & z \\ x & y & -z \\ x & -y & z \end{pmatrix}$ satisfies the equation $A'=A^{-1}$.

Q10. If $A=\begin{bmatrix} 0 & 6 & 7 \\ -6 & 0 & 8 \\ 7 & -8 & 0 \end{bmatrix}$, $B=\begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 2 \\ 1 & 2 & 0 \end{bmatrix}$ and $C=\begin{bmatrix} 2 \\ 2 \\ 3 \end{bmatrix}$, then verify that $(A+B)C=AC+BC$.

OR

If $A=\begin{bmatrix} 3 & 1 \\ 7 & 5 \end{bmatrix}$, then find $(x+y)$ so that $A^2-xI+yA=O$. Hence find A^{-1}. $[5\times 2=10$

theopgupta.com

MATHEMATICIA BY O.P. GUPTA

...a name you can bank upon!

Feel Safe to **Share this Document** with other math scholars

CLICK NOW

TO Download

or, just type - theopgupta.com

FREE PDF TESTS AND ASSIGNMENTS OF THE CLASSES XII, XI & X

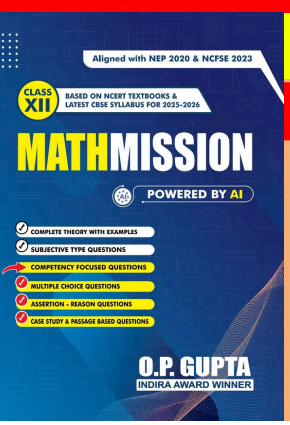
To get FREE PDF Materials, join WhatsApp Teachers Group by Clicking on the Logo

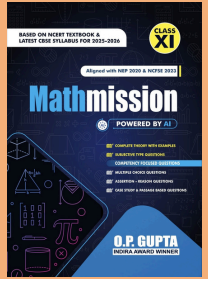
Click on the Book cover to buy!

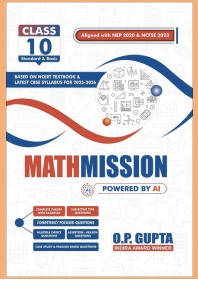
If you are a **Student**, then you may join our **Students Group**

CLICK HERE FOR CLASSES IX & X

CLICK HERE FOR CLASSES XI & XII







You can add our WhatsApp no. +919650350480 to your Groups also

Many **Direct Questions from our Books** have been asked in the recent CBSE Exams

MATHMISSION FOR XII, XI & X

2025-26 Edition

/theopgupta /theopgupta /theopgupta /@theopgupta

Buy our books on amazon Flipkart

For Bulk Orders of our Books at Discounted Price, contact on +91-9650350480

CLASS 12

PLEASURE TEST SERIES

POWERED BY AI

39 CBSE SAMPLE PAPERS

MATHEMATICS (041)

SESSION 2025-26

- FULLY SOLVED OFFICIAL CBSE SAMPLE PAPER issued on 30 July, 2025
- 15 FULLY SOLVED SAMPLE PAPERS BASED ON LATEST PATTERN
- 10 UNSOLVED SAMPLE PAPERS WITH VIDEO / PDF SOLUTIONS
- 13 PDF SOLVED SAMPLE PAPERS AVAILABLE THROUGH QR CODE
- FREE PDF ACCESS TO LAST 15 YEARS CBSE SOLVED PAPERS ON theopgupta.com

O.P. GUPTA

INDIRA AWARD WINNER