

THE O.P. GUPTA

ADVANCED MATH CLASSES

Class XII - Mathematics (041)

Topics - Determinants

Alpha Test Series-2

(For Academic session 2025-26)

Max. Marks - 30

Time - 60 Minutes

For Video Solutions
CLICK HERE

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

Q01. If A, B and C are square matrices of order 3 and $|BC| = 2|A|$, then find $|2A^{-1}BC|$.

OR

If $A = \begin{bmatrix} 2 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 5 \end{bmatrix}^{-1}$, then find matrix A.

Q02. Let A(1, 3), B(0, 0) and C(k, 0). Using determinants, find k when the area of ΔABC is 3 square units.

Q03. If $\begin{vmatrix} x & \sin \theta & \cos \theta \\ -\sin \theta & -x & 1 \\ \cos \theta & 1 & x \end{vmatrix} = 8$, then write the value of x, $x \in \mathbb{R}$.

Q04. If $f(x) = \begin{vmatrix} a & -1 & 0 \\ ax & a & -1 \\ ax^2 & ax & a \end{vmatrix}$, then find $f'(x)$.

Q05. Find $|3AB|$, if $A = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 5 & 3 \\ 4 & 2 \end{bmatrix}$. [2×5=10]

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

Q06. If A, B and C are angles of a triangle, then find the value of $\begin{vmatrix} \sin(A+B+C) & \sin B & \cos C \\ -\sin B & 0 & \tan A \\ \cos(A+B) & -\tan A & 0 \end{vmatrix}$.

Q07. If $A = \begin{bmatrix} 2 & 1 & -1 \\ 3 & 1 & -2 \\ 1 & 0 & -1 \end{bmatrix}$ such that $AB = BA = O$, then find B; when it is given that B is non-zero matrix.

OR

If $A = \begin{bmatrix} 5 & 0 & 4 \\ 2 & 3 & 2 \\ 1 & 2 & 1 \end{bmatrix}$ and $B^{-1} = \begin{bmatrix} 1 & 3 & 3 \\ 1 & 4 & 3 \\ 1 & 3 & 4 \end{bmatrix}$, find $(AB)^{-1}$. Also, find $|(AB)^{-1}|$. [3×2=6]

Following is of 4 Marks (Q08).

Q08. **CASE STUDY :** A scholarship is a sum of money provided to a student to help him or her pay for education. Some students are granted scholarships based on their academic achievements, while others are rewarded based on their financial needs.

Every year a school offers scholarships to girl children and meritorious achievers based on certain criteria. In the session 2022-23, the school offered monthly scholarship of ₹3000 each to some girl students and ₹4000 each to meritorious achievers in academics as well as sports.



In all, 50 students were given the scholarships and monthly expenditure incurred by the school on scholarships was ₹180000.

Based on the above information, answer the following questions.

(i) Express the given information algebraically using matrices.

(ii) Check whether the system of matrix equations so obtained is consistent or not.

- (iii) Find the number of scholarships of each kind given by the school, using matrices.
 (iv) Had the amount of scholarship given to each girl child and meritorious student been interchanged, what would be the monthly expenditure incurred by the school? [1 × 4 = 4]

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

Q09. If $A = \begin{bmatrix} 1 & 2 & 1 \\ 1 & 0 & 3 \\ 2 & -3 & 0 \end{bmatrix}$, find A^{-1} .

Using the above obtained inverse of matrix A, solve the following system of equations :
 $x + 2y + z = 7$, $x + 3z = 11$, $2x - 3y = 1$.

Q10. If $A = \begin{bmatrix} 1 & -1 \\ 2 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 1 \\ 2 & 4 \end{bmatrix}$, $C = \begin{bmatrix} -1 & 2 \\ 1 & -4 \end{bmatrix}$ and $AB - CD = O$ then, find the matrix D.

OR

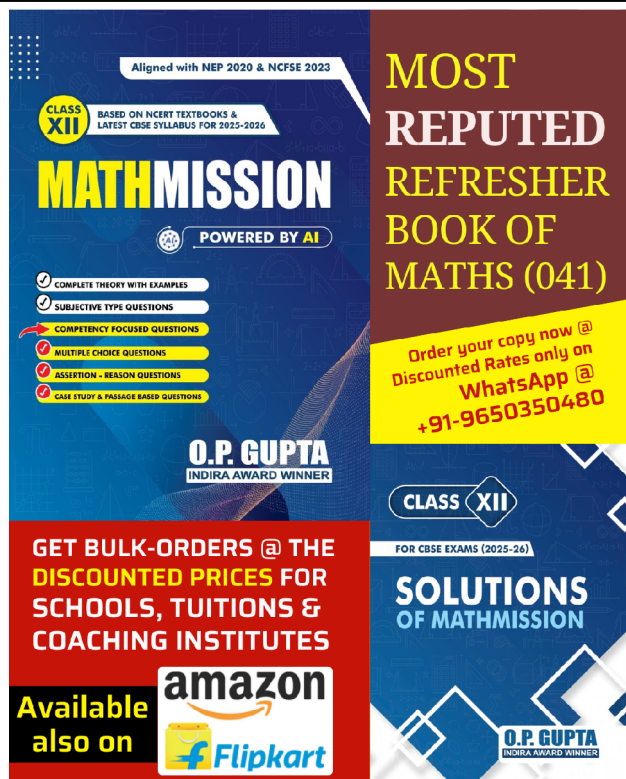
Find the product $\begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix} \begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$.

Hence, solve the given system of equations : $x - y = 3$, $2x + 3y + 4z = 17$, $y + 2z = 7$. [5 × 2 = 10]

① SHARE THIS FILE with all other math scholars.

① You may Add our mobile no. +919650350480 to your WhatsApp Groups for regular updates.

① MS Word files of MCQ Tests / Subjective Tests / Case-Study Questions are available for SALE.



We have released Set of 2 Books for CBSE XII Maths (041) useful for session 2025-26.

1. MATHMISSION FOR XII

- ✓ COMPLETE THEORY & EXAMPLES
- ✓ SUBJECTIVE TYPE QUESTIONS
- ✓ COMPETENCY FOCUSED QUESTIONS
 - ✦ Multiple Choice Questions
 - ✦ Assertion-Reason Questions
 - ✦ Case-Study / Passage Based Questions
- ✓ H.O.T.S. Questions from recent exams.
- ✓ Answers of all the Questions of Exercises

2. SOLUTIONS OF MATHMISSION

- ✓ Step-by-step Detailed Solutions (For all the Exercises of MATHMISSION)

Grab the best Seller book for X, XI & XII Maths (041) CBSE Exams.

✓ **MATHMISSION FOR XII, XI & X**
 (Refresher Guide with Competency Focused Questions)

✦ The books are developed as per CBSE Curriculum for 2025-26.

- ✓ **CBSE 39 SAMPLE PAPERS For Class XII**
 - ✓ **CBSE YODDHA SAMPLE PAPERS For Class XI**
 - ✓ **CBSE UMANG SAMPLE PAPERS For Class X**
- (Order now at Discounted rate on WhatsApp - 9650350480)



Scan QR-Code to
Visit Amazon Store

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!



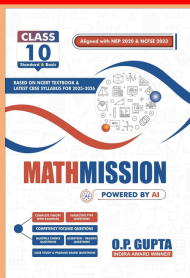
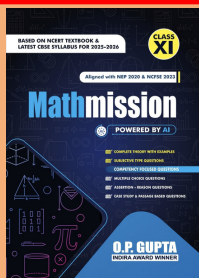
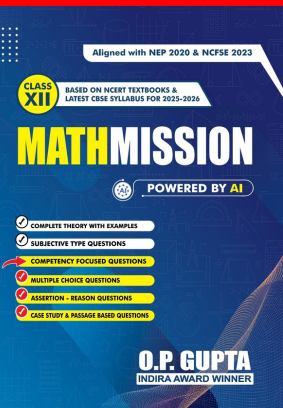
If you are a **Student**, then you may
join our **Students Group**

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

Buy our
books on
amazon
Flipkart

/theopgupta /theopgupta /theopgupta /@theopgupta

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