

O. P. JINDAL SCHOOL, SAVITRI NAGAR**Weekly Test -3 (2025 – 2026)****Class : XII****Subject: Mathematics****Max Marks : 20****Time: 1 Hour****General Instructions:**

- (i) All the questions are compulsory.
- (ii) The question paper consists of 13 questions divided into 3 sections. Section A has 8 questions of 1 mark each, section B has 3 questions of 2 marks and section C has 2 questions of 3 marks each.
- (iii) There is no overall choice. However, internal choice has been provided in 2 questions. You have to attempt only one of the alternatives in all such questions.

Section - A

- If $A^2 - A + I = O$, then the inverse of A is :
(a) A (b) $A + I$ (c) $I - A$ (d) $A - I$
- The value of x for which the matrix $\begin{bmatrix} 3+x & 5 \\ 4 & 6-x \end{bmatrix}$ is a singular matrix is:
(a) 4 (b) 2 (c) 3 (d) None of these
- Total number of possible matrices of order 3×3 with each entry 2 or 0 is
(a) 9 (b) 27 (c) 81 (d) 512
- A is a given matrix of order 3×2 . If the order of matrix AB be 3×2 , then what will be the order of B ?
(a) 1×3 (b) 2×3 (c) 3×3 (d) 2×2
- If A is a 3×3 matrix, whose elements are given by $a_{ij} = \frac{1}{3}[-3i + j]$, then the value of a_{23} is:
(a) 3 (b) 2 (c) 1 (d) -1
- If $\begin{bmatrix} 2x+y & 3y \\ 0 & 4 \end{bmatrix} = \begin{bmatrix} 6 & 0 \\ 6 & 4 \end{bmatrix}$, then the value of x and y are
(a) 2 & 0 (b) 3 & 0 (c) 2 & 2 (d) 0 & 3
- If A and B are matrices of order $3 \times n$ and $m \times 5$ respectively, then find the order of matrix $5A - 3B$, given that it is defined, is
(a) 5×3 (b) 3×3 (c) 3×5 (d) 5×5
- If A is a matrix of order 2×3 and B is a matrix of order 3×5 , then what is the order of $(AB)^T$?
(a) 5×2 (b) 2×5 (c) 3×5 (d) 5×3

Section - B

- Find X and Y if $2X + 3Y = \begin{bmatrix} 2 & 3 \\ 4 & 0 \end{bmatrix}$ & $3X + 2Y = \begin{bmatrix} 2 & -2 \\ -1 & 5 \end{bmatrix}$
- If A and B are symmetric matrices, show that AB is symmetric, if $AB = BA$.

OR

If $A = \begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix}$, Prove that $A - A'$ is a skew symmetric matrix.

11. If the matrix $A = \begin{bmatrix} 2 & a & 5 \\ -1 & 4 & b \\ c & -4 & 9 \end{bmatrix}$ is a symmetric matrix, then find $a + b + c$.

Section - C

12. Express the matrix $B = \begin{bmatrix} 2 & 0 & 1 \\ 2 & 1 & 3 \\ 1 & -1 & 0 \end{bmatrix}$ as the sum of a symmetric and a skew symmetric matrix.

13. If $A = \begin{bmatrix} 3 & -2 & 3 \\ 2 & 1 & -1 \\ 4 & -3 & 2 \end{bmatrix}$, find A^{-1} .

Using A^{-1} solve the system of equations:

$$3x - 2y + 3z = 8$$

$$2x + y - z = 1$$

$$4x - 3y + 2z = 4$$

OR

Evaluate the product AB , where

$$A = \begin{bmatrix} 1 & -1 & 0 \\ 2 & 3 & 4 \\ 0 & 1 & 2 \end{bmatrix} \text{ and } B = \begin{bmatrix} 2 & 2 & -4 \\ -4 & 2 & -4 \\ 2 & -1 & 5 \end{bmatrix}$$

Hence solve the system of linear equations:

$$x - y = 3$$

$$2x + 3y + 4z = 17$$

$$y + 2z = 7$$

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