Foundation

PARISHRAM 2025

Mathematics

DPP: 1

Matrices

Q1 The order of the matrix having 3 columns and 5 rows is equal to
(A) 5×3
(B) 3×5
(C) 15×1
(D) None of these

Q2 If the order of the matrix is 5×7, then the no. of elements in the matrix is equal to
(A) 35 (B) 42
(C) 12 (D) 4

Q3 If the no. of elements in a matrix is 36 , then the no. of possible order is
(A) 10 (B) 9
(C) 8 (D) 7

Q4 The square matrix whose all elements are equal to zero is called
(A) Null matrix
(B) Horizontal matrix
(C) Identity matrix
(D) Vertical matrix

Q5 The square matrix whose diagonal elements are equal to 1 and non-diagonal elements are zero is
(A) Diagonal matrix
(B) Null matrix
(C) Scalar matrix
(D) Identity matrix

Q6 The matrix in which no. of rows is equal to no. of columns is called
(A) Rectangle matrix
(B) Square matrix
(C) Vertical matrix
(D) Horizontal matrix

Q7 The matrix $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 3 & 0 \\ 0 & 0 & 3 \end{bmatrix}$ is
(A) Column matrix
(B) Diagonal matrix
(C) Identity matrix
(D) Null matrix

Q8 The matrix $\begin{bmatrix} -1 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -1 \end{bmatrix}$ is
(A) Column matrix
(B) Null matrix
(C) Scalar matrix
(D) Identity matrix

Q9 Which one of the following statements is not true?
(A) A scalar matrix is a square matrix
(B) A diagonal matrix is a square matrix
(C) A scalar matrix is a diagonal matrix
(D) A diagonal matrix is a scalar matrix

Q10 If $\begin{bmatrix} x-7 & y+3 \\ a-8 & b+2 \end{bmatrix} = \begin{bmatrix} 2 & 3 \\ -1 & 4 \end{bmatrix}$, then the value of $x+y+a+b$ is equal to
(A) 14 (B) 17
(C) 16 (D) 18

Q11 Consider the following statements

I. Every zero matrix is a square matrix.
II. A matrix has a numerical value.
III. A unit matrix is a diagonal matrix.
Which of the above statement (s) is/are correct?
(A) Only II
(B) Only III
(C) Both II and III
(D) Both I and III

Q12 Values of x and y such that the following matrices

$$A = \begin{bmatrix} 2x+1 & 2y \\ 0 & y^2-5y \end{bmatrix}, B = \begin{bmatrix} x+3 & y^2+2 \\ 0 & -6 \end{bmatrix}$$

are equal, are
(A) $x = 2, y = 3$
(B) $x = y = 2$
(C) $x = y = 0$
(D) $x = 2$ and no real value of y

Q13 The element of a matrix at a_{32} whose $a_{ij} = \frac{3i+2j}{5}$ is equal to
(A) $\frac{19}{5}$
(B) $\frac{11}{5}$
(C) $\frac{13}{5}$
(D) $\frac{25}{5}$

Q14 If $\begin{pmatrix} x-y & 2x+z \\ 2x-y & 3z+w \end{pmatrix} = \begin{pmatrix} -1 & 5 \\ 0 & 13 \end{pmatrix}$ then
(A) $z = 4, w = 3$
(B) $z = 3, w = 4$
(C) $z = 2, w = -1$
(D) $z = 1, w = 2$

Q15 The value of $x, y, z \& a$ which satisfy the following matrix equation

$$\begin{bmatrix} x+1 & 3y+x \\ z-1 & 4a-6 \end{bmatrix} = \begin{bmatrix} 0 & 7 \\ 3 & 2a \end{bmatrix}$$

(A) $x = 2, y = \frac{2}{3}, z = 1, a = 3$
(B) $x = -1, y = \frac{8}{3}, z = 4, a = 3$
(C) $x = -2, y = \frac{2}{3}, z = 1, a = 2$
(D) $x = -1, y = \frac{5}{3}, z = 2, a = 5$

Q16 Consider the matrix $A = \begin{bmatrix} 2\sqrt{2} & -7 & 5\sqrt{3} \\ 6\sqrt{2} & -8 & 3 \\ 4 & 5 & -9 \end{bmatrix}$, then find the value of $a_{12} + \sqrt{2} \times a_{11} - \sqrt{3} \times a_{13} + a_{32}$.

Q17 Construct a 3×2 matrix whose elements are given by $a_{ij} = (2i - j)$.

Q18 Construct a 4×3 matrix whose elements are given by $a_{ij} = \frac{i}{j}$.

Q19 Construct a 2×2 matrix whose elements are given by $a_{ij} = \frac{(i+2j)^2}{2}$.

Q20 Construct a 3×4 matrix whose elements are given by $a_{ij} = \frac{1}{2}|-3\dot{i} + \mathbf{j}|$.

Answer Key

Q1 (A)

Q2 (A)

Q3 (B)

Q4 (A)

Q5 (D)

Q6 (B)

Q7 (B)

Q8 (C)

Q9 (D)

Q10 (D)

Q11 (B)

Q12 (D)

Q13 (C)

Q14 (B)

Q15 (B)

Q16 -13

Q17 $\begin{bmatrix} 1 & 0 \\ 3 & 2 \\ 5 & 4 \end{bmatrix}$

Q18 $\begin{bmatrix} 1 & 1/2 & 1/3 \\ 2 & 1 & 2/3 \\ 3 & 3/2 & 1 \\ 4 & 2 & 4/3 \end{bmatrix}$

Q19 $\begin{bmatrix} \frac{9}{2} & \frac{25}{2} \\ 8 & 18 \end{bmatrix}$

Q20 $\begin{bmatrix} 1 & 1/2 & 0 & 1/2 \\ 5/2 & 2 & 3/2 & 1 \\ 4 & 7/2 & 3 & 5/2 \end{bmatrix}$