# Comprehensive Test Series-02
## (Matrices)
## XII

**TIME: 30 min.** **MM: 25**

**General Instructions:**

- All Questions are compulsory.
- Use of calculator is not permitted.

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Q. 1 Construct a $2 \times 3$ matrix whose elements $a_{ij}$ are given by

$$a_{ij} = \begin{cases} 2i + j, \text{ when } i < j. \\ 4i\,.\,j, \text{ When } i = j \\ i + 2j \text{ when } i > j \end{cases}$$

Q. 2 Find the values of x, y and z if $\begin{bmatrix} x+y+z \\ x+z \\ y+z \end{bmatrix} = \begin{bmatrix} 9 \\ 5 \\ 7 \end{bmatrix}$

Q.3 Find the value of a, b, c, and d from the following equations. $\begin{bmatrix} 2a+b & a-2b \\ 5c-d & 4c+3d \end{bmatrix} = \begin{bmatrix} 4 & -3 \\ 11 & 24 \end{bmatrix}$

Q.4 Construct a $3 \times 4$ matrix $A = [a_{ij}]$ whose elements $a_{ij}$ are given by

$$a_{ij} = \frac{|-3i + j|}{2}$$

Q.5 if $\begin{bmatrix} x+3 & z+4 & 2y-7 \\ 4x+6 & a-1 & 0 \\ b-3 & 3b & z+2c \end{bmatrix} = \begin{bmatrix} 0 & 6 & 3y-2 \\ 2x & -3 & 2c+2 \\ 2b+4 & -21 & 0 \end{bmatrix}$ obtain the values of a, b, c, x, y and z.

Q.6 A matrix has 36 elements. What are the possible orders it can have? What, if it has 7 elements?

Q.7 For what value of x and y are the following matrices equal?

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

Q.8 Out of the given matrices choose that matrix which is a scalar matrix. Give reason.

(a) $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ (c ) $\begin{bmatrix} 0 & 0 \\ 0 & 0 \\ 0 & 0 \end{bmatrix}$ (d) $\begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$