Comprehensive Test Series-02
(Determinants -: Matrix method)
XII

TIME: 1.5hr.   **MM: 40**

General Instructions:
- ➢ All Questions are compulsory.
- ➢ Use of calculator is not permitted.

Q.1   Using matrices, solve the equations
$5x - 7y = 2$
$7x - 5y = 3$

Q.2   Use matrix method to show that the system of equations
$x + 3y = 5$
$2x + 6y = 8$ is inconsistent.

Q.3   Using matrix method, determine whether the following system of equations is consistent or inconsistent:
(i) $5x - y + 4z = 5$ (ii) $3x - y - 2z = 2$
    $2x + 3y + 5z = 2$ $2y - z = -1$
    $5x - 2y + 6z = -1$ $3x - 5y = 3.$

Q.4   Using matrices, solve the following system of equation:
$3x - y + z = 5$
$2x - 2y + 3z = 7$
$x + y - z = -1$

Q.5   The sum of three numbers is -1. If we multiply the second number by 2, third number by 3 and add them we get 5. If we subtract the third number from the sum of first and second numbers, we get -1. Represent it by a system of equations. Find the number using inverse of a matrix.

Q.6   Solve the following system of equations, using matrices.
$$\frac{2}{x} + \frac{3}{y} + \frac{10}{z} = 4$$
$$\frac{4}{x} - \frac{6}{y} + \frac{5}{z} = 1$$
$$\frac{6}{x} + \frac{9}{y} - \frac{20}{z} = 2$$

Q.7   Find A^{-1}, where $A = \begin{pmatrix} 4 & 2 & 3 \\ 1 & 1 & 1 \\ 3 & 1 & -2 \end{pmatrix}$. Hence solve the system of equations:

$4x + 2y + 3z = 2$, $x + y + z = 1$, $3x + y - 2z = 5.$