

**NATIONAL PUBLIC SCHOOL
BENGALURU
TERM-1 – PERIODIC TEST-1 - 2021-22
MATH 1**

**Class: 10
Date: 04.08.21**

**Max. Marks: 30
Time: 65 min**

Choose the correct option

1. If the lines given by $3x + 2ky = 2$ and $2x + 5y + 1 = 0$ are parallel, then the value of k is 1
(a) $\frac{-5}{4}$ (b) $\frac{2}{5}$ (c) $\frac{15}{4}$ (d) $\frac{3}{2}$
2. If matrix A is of order 2×1 and B is of order 1×2 , then order of the product matrix AB is 1
(a) 2×1 (b) 1×1 (c) 1×2 (d) 2×2

Answer the following

3. Form a pair of linear equations in x and y which has the unique solution $x = 3, y = -3$. 1
4. Given $N = \begin{bmatrix} 2 \\ -7 \end{bmatrix}$ and $S = \begin{bmatrix} 6 \\ 3 \end{bmatrix}$, find the matrix P if $N + P = S$ 1
5. Write a matrix of order 2×3 . 1
6. **Case study based question. Each sub question carries 1 mark** 3

Amar and Antony have membership in a library. Library takes a fixed charge for the first two days, and an additional charge for each day thereafter.

Based on this information answer the following:

Let the fixed charge for the first two days be ₹ x and, additional charge for each day thereafter be ₹ y .

- i. Amar paid ₹ 22 for a book kept for six days, express this in terms of x and y .
(a) $2x - 6y = 22$ (b) $x + 4y = 22$
(c) $2x + 4y = 22$ (d) $2x + 6y = 22$
 - ii. Antony paid ₹ 16 for the book kept for four days, translate this is an equation.
(a) $2x - 4y = 16$ (b) $2x + 2y = 16$
(c) $x + 2y = 16$ (d) $x + 4y = 16$
 - iii. Graphically, equations obtained in the above situations represent two lines which are
(a) coincident (b) intersecting at exactly one point.
(c) parallel (d) intersecting at exactly two points.
7. Find the value of p for which the pair of equations given below has unique solution? 2
 $4x + py + 8 = 0, 2x + 2y + 2 = 0$
 8. Find the values of h and k , if $\begin{bmatrix} h & -1 \\ 0 & 2h \end{bmatrix} \begin{bmatrix} 3 \\ 2 \end{bmatrix} = \begin{bmatrix} k \\ 16 \end{bmatrix}$ 2
 9. If $H = \begin{bmatrix} 8 & -4 \\ 0 & 6 \end{bmatrix}$, find its transpose matrix H^t . Also calculate the product matrix HH^t 2
 10. Solve by using cross multiplication method: $x - 3y - 7 = 0, 3x - 3y - 15 = 0$ 2

11. Solve the following pair of equations: 3

$$\frac{1}{3x+y} + \frac{1}{3x-y} = \frac{3}{4}, \quad \frac{1}{2(3x+y)} - \frac{1}{2(3x-y)} = \frac{-1}{8}.$$

12. Solve by matrix method: $2x + y = 12$, $x + 2y = 3$ 3

13. If $A = \begin{bmatrix} 3 & 1 \\ 1 & 3 \end{bmatrix}$ and I is a unit matrix of the same order as that of A , then calculate $A^2 - 6A - 8I$ 3

14. Solve graphically the equations $5x - y = 5$ and $3x - y = 3$. Determine the co-ordinates of the vertices of the triangle formed by these lines and the Y axis. Also find the area of the triangle formed. 5
