

# CBSE Class 12 Maths Sample Paper Set 1

Time: 3 hours

Total Marks: 100

1. All questions are compulsory.
2. The question paper consist of 29 questions divided into four sections A, B, C and D. Section A comprises of 4 questions of one mark each, section B comprises of 8 questions of two marks each, section C comprises of 11 questions of four marks each and section D comprises of 6 questions of six marks each.
3. Use of calculators is not permitted.

## SECTION – A

1. Find the inverse of  $g: R \rightarrow R, g(x) = 4e^{2x} + 3$  and the domain of the  $g^{-1}(x)$
2. What should be the value of  $n$  for which the points  $(2, -3)$ ,  $(3, 1)$  and  $(5, n)$  are collinear?
3. If  $X$  is a set of the factors of 30,  $a, b \in X$  and  $f(a, b, c) = (a + b) * (b' + c)$  where
  - (i)  $a + b$  is defined such that  $a + b = \text{LCM}(a, b)$
  - (ii)  $a * b$  is defined such that  $a * b = \text{GCD}(a, b)$
  - (iii)  $a' = 30/a$

What is the value of  $f(2, 5, 15)$ ?

4. A parallelogram is constructed on  $3\vec{a} + \vec{b}$  and  $\vec{a} - 4\vec{b}$  where  $|\vec{a}| = 6$  and  $|\vec{b}| = 8$  and  $\vec{a}$  and  $\vec{b}$  are anti-parallel. What is the length of the longer diagonal?

(OR)

If  $\vec{a} = \hat{i} + \hat{j} + \hat{k}, \vec{b} = \hat{i} - \hat{j} + 2\hat{k}$  and  $\vec{c} = x\hat{i} + (x - 2)\hat{j} - \hat{k}$ , and if the vector lies in the plane of vectors  $\vec{a}$  and  $\vec{b}$ , then what is the value of  $x$ ?

## SECTION – B

5. Express the matrix  $A = \begin{bmatrix} 3 & 7 \\ 1 & 4 \end{bmatrix}$  as sum of two matrices such that one is symmetric and the other is skew symmetric.

(OR)

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