SAMPLE QUESTION PAPER MATHEMATICS (041) CLASS XII – 2017-18

Time allowed: 3 hours

Maximum Marks: 100

General Instructions:

- (i) All questions are compulsory.
- (ii) This question paper contains 29 questions.
- (iii) Question 1-4 in Section A are very short-answer type questions carrying 1 mark each.
- (iv) Questions 5-12 in Section B are short-answertype questions carrying 2 marks each.
- (v) Questions **13-23** in **Section C** are long-answer-**I** type questions carrying **4** marks each.
- (vi) Questions **24-29** in **Section D** are long-answer-**II** type questions carrying **(V**arks each.

	Questions 1 to 4 carry 1 mark each.
1.	Let $A = \{1, 2, 3, 4\}$. Let Y be the equivalence (e) it on on $A \times A$ defined by
	$(a c) \mathbf{R} c, d$ if $a + d = l - c_a \mathbf{V} \mathbf{U}$ be equivalence class $[(1,3)]$.
2.	If $A = [a_{ij}]$ is a matrix of order 2×2 , such that $ A = -15$ and C_{ij} represents the cofactor
	of a_{ij} , then find $a_{21}c_{21} + a_{22}c_{22}$
3.	Give an example of vectors \vec{a} and \vec{b} such that $ \vec{a} = \vec{b} $ but $\vec{a} \neq \vec{b}$.
4.	Determine whether the binary operation * on the set N of natural numbers
	defined by $a * b = 2^{ab}$ is associative or not.
	Section B
	Questions 5 to 12 carry 2 marks each
5.	If $4\sin^{-1} x + \cos^{-1} x = \pi$, then find the value of <i>x</i> .
6.	Find the inverse of the matrix $\begin{bmatrix} -3 & 2 \\ 5 & -3 \end{bmatrix}$. Hence, find the matrix <i>P</i> satisfying the
	matrix equation $P\begin{bmatrix} -3 & 2\\ 5 & -3 \end{bmatrix} = \begin{bmatrix} 1 & 2\\ 2 & -1 \end{bmatrix}$.