

**CHOITHRAM SCHOOL MANIKBAGH INDORE**

**CLASS XII Session : 2018-19**

**SUBJECT: MATHEMATICS**

**ASSIGNMENT No: 1**

Assignment date: 25/04/18

Submission date: 15/06/18

Q. No	Question	Marks	Level
<b>VERY SHORT ANSWER TYPE</b>			
1.	Find the values of x and y if, $2\begin{bmatrix} 1 & 3 \\ 0 & x \end{bmatrix} + \begin{bmatrix} y & 0 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 1 & 8 \end{bmatrix}$	1	Knowledge
2.	If $f(x) = x + 7$ and $g(x) = x - 7$ , $x \in \mathbb{R}$ , find $(f \circ g)(7)$	1	Knowledge
3	If matrix $A = \begin{bmatrix} 1 & 2 & 3 \end{bmatrix}$ , write $A.A'$ , where $A'$ is transpose of matrix A.	1	Knowledge
<b>SHORT ANSWER TYPE I</b>			
4	If $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$ , verify that $A^2 - 4A - 5I = 0$	2	Logic
5	If $A = \begin{bmatrix} 2 & 3 \\ 5 & -2 \end{bmatrix}$ , write $A^{-1}$ in terms of A.	2	Multi conceptual
6	Using elementary transformations, find the inverse of the following matrix: $\begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$	2	Knowledge
7	Let $A = \mathbb{R} \times \mathbb{R}$ and $*$ be the binary operation on A defined by $(a, b) * (c, d) = (a + c, b + d)$ . Prove that $*$ is commutative and associative. write the inverse element of the element $(3, -5)$ in A.	2	H.O.T
<b>SHORT ANSWER TYPE II</b>			
8	Using properties of determinant, prove the following : $\begin{vmatrix} 1 & 1+p & 1+p+q \\ 2 & 3+2p & 1+3p+2q \\ 3 & 6+3p & 1+6p+3q \end{vmatrix} =$	3	Understanding
9	Determine whether the relation R defined on the set R of all real numbers as $R = \{(a, b) : a, b \in \mathbb{R} \text{ and } a - b + \sqrt{3} \in S\}$ , where S is the set of all irrational numbers, is reflexive, symmetric and transitive.	3	H.O.T
10	If the function $f: \mathbb{R} \rightarrow \mathbb{R}$ be given by $f(x) = x^2 + 2$ and $g: \mathbb{R} \rightarrow \mathbb{R}$ be given by $g(x) = \frac{x}{x-1}$ , $x \neq 1$ , find $f \circ g$ and $g \circ f$ and hence find $f \circ g(2)$ and $g \circ f(-3)$ .	3	Understanding
<b>LONG ANSWER TYPE</b>			
11	Show that each of the relation R in the set $A = \{x \in \mathbb{Z} : 0 \leq x \leq 12\}$ given by (i) $R = \{(a, b) :  a - b  \text{ is a multiple of } 4\}$ (ii) $R = \{(a, b) : a = b\}$ is an equivalence relation. Find the set of all elements related in each case.	5	Logic
12	If $A = \begin{bmatrix} 3 & 2 & 1 \\ 4 & -1 & 2 \\ 7 & 3 & -3 \end{bmatrix}$ find $A^{-1}$ and hence solve the following system of linear equations $3x + 4y + 7z = 14$ , $2x - y + 3z = 4$ , $x + 2y - 3z = 0$ .	5	Multi Conceptual