CHOITHRAM SCHOOL MANIKBAGH INDORE

CLASS – XII Session: 2017-18

Subject: Mathematics **Assignment No: 1**

Allotment Date: 07.04.17 **Submission Date: 17.04.17**

S.No	QUESTIONS
	VERY SHORT ANSWER TYPE
1	Find the values of x and y if, $2\begin{bmatrix}1 & 3\\ 0 & x\end{bmatrix} + \begin{bmatrix}y & 0\\ 1 & 2\end{bmatrix} = \begin{bmatrix}5 & 6\\ 1 & 8\end{bmatrix}$
2	For what valve of x , is the following matrix singular : $\begin{bmatrix}3-2x & x+1\\ 2 & 4\end{bmatrix}$
3	Evaluate : $\begin{vmatrix}sin30° & cos30°\\ -sin60° & cos60°\end{vmatrix}$
4	If matrix A= [1 2 3] , write A.A’ , where A’ is transpose of matrix A.
5	Find the value of following determinant : $\begin{vmatrix}a-b & b-c & c-a\\ b-c & c-a & a-b\\ c-a & a-b & b-c\end{vmatrix}$
6	If A = $\begin{bmatrix}cos\alpha & -sin\alpha\\ sin\alpha & cos\alpha\end{bmatrix}$, then for what value of α , A is identity matrix.
7	A is a square matrix of order 3 and $\lvert A\rvert$ = 7 . Write the value of $\lvert Adj.A\rvert$
8	If $A^T = \begin{bmatrix}3 & 4\\ -1 & 2\\ 0 & 1\end{bmatrix}$ and B = $\begin{bmatrix}-1 & 2 & 1\\ 1 & 2 & 3\end{bmatrix}$, then find A^T - B^T
	SHORT ANSWER TYPE I
9	Let A = $\begin{bmatrix}3 & 2 & 5\\ 4 & 1 & 3\\ 0 & 6 & 7\end{bmatrix}$ .Express A as the sum of two matrices such that one is symmetric and the other is skew – symmetric.
10	If A = $\begin{bmatrix}1 & 2 & 2\\ 2 & 1 & 2\\ 2 & 2 & 1\end{bmatrix}$, verify that $A^2 - 4A - 5I = 0$
11	Using elementary transformations , find the inverse of the following matrix : $\begin{bmatrix}2 & 5\\ 1 & 3\end{bmatrix}$
12	If A = $\begin{bmatrix}2 & 3\\ 5 & -2\end{bmatrix}$, write A^{-1} in terms of A.
13	Find the value of x – y from the following equations : $2\begin{bmatrix}x & 5\\ 7 & y-3\end{bmatrix} + \begin{bmatrix}3 & -4\\ 1 & 2\end{bmatrix} = \begin{bmatrix}7 & 6\\ 15 & 14\end{bmatrix}$
	SHORT ANSWER TYPE II
14	Using properties of determinant , prove the following : $\begin{vmatrix}1 & 1+p & 1+p+q\\ 2 & 3+2p & 1+3p+2q\\ 3 & 6+3p & 1+6p+3q\end{vmatrix} = 1$
15	Using properties of determinant , prove the following : $\begin{vmatrix}x+y & x & x\\ 5x+4y & 4x & 2x\\ 10x+8y & 8x & 3x\end{vmatrix} = x^3$
16	Using properties of determinants prove that : $\begin{bmatrix}x & x^2 & 1+px^3\\ y & y^2 & 1+py^3\\ z & z^2 & 1+pz^3\end{bmatrix}$ (1+pxyz)(x-y)(y-z)(z-x)
17	Using properties of determinants, solve the following for x : $\begin{vmatrix}a+x & a-x & a-x\\ a-x & a+x & a-x\\ a-x & a-x & a+x\end{vmatrix} = 0$
18	Using properties of determinants , prove the following : $\begin{vmatrix}a^2+1 & ab & ac\\ ab & b^2+1 & bc\\ ca & cb & c^2+1\end{vmatrix} = 1+a^2+b^2+c^2$

19	Using properties of determinant , prove the following : $\begin{vmatrix} 1+x & 1 & 1 \\ 1 & 1+y & 1 \\ 1 & 1 & 1+z \end{vmatrix}$ = xyz + xy + yz + zx
20	If x , y , z are different & $\begin{vmatrix} x & x^2 & 1+x^3 \\ y & y^2 & 1+y^3 \\ z & z^2 & 1+z^3 \end{vmatrix} = 0$, show that xyz = -1
	LONG ANSWER TYPE
21	Using matrices , solve the following system of equations : X + 2y – 3z = -4 2x + 3y + 3z = 2 3x – 3y -4z = 11
22	Using elementary transformations , find the inverse of the following matrix : $\begin{bmatrix} 3 & 0 & -1 \\ 2 & 3 & 0 \\ 0 & 4 & 1 \end{bmatrix}$
23	Using properties of determinant , prove the following : $\begin{vmatrix} 1 & a & a^2-bc \\ 1 & b & b^2-ca \\ 1 & c & c^2-ab \end{vmatrix}$ = 0
24	Evaluate: $\begin{vmatrix} 10! & 11! & 12! \\ 11! & 12! & 13! \\ 12! & 13! & 14! \end{vmatrix}$
25	Using elementary transformations , find the inverse of the following matrix : $\begin{bmatrix} 1 & 2 & -2 \\ -1 & 3 & 0 \\ 0 & -2 & 1 \end{bmatrix}$