MID Sem question bank

Q-1) Answer the following (For 2 marks)

① If $\begin{vmatrix} a & b \\ c & d \end{vmatrix} = 4$ then

$\begin{vmatrix} 6a & 6b \\ 6c & 6d \end{vmatrix} =$ ——

② $\begin{vmatrix} 1001 & 1 & 1001 \\ 2001 & 2 & 2001 \\ 3001 & 1 & 3001 \end{vmatrix} =$ ——

③ If $\begin{vmatrix} x+6 & -1 \\ 1 & x-1 \end{vmatrix} = 1$ then find x.

④ The order of $\begin{bmatrix} 1 & -1 & 7 & 2 \\ 2 & 4 & 8 & 3 \\ 3 & 6 & 9 & 4 \end{bmatrix}$ is ——

⑤ The matrix $\begin{bmatrix} 2 & 0 & 0 \\ 3 & 4 & 0 \\ -6 & 9 & 8 \end{bmatrix}$ is called —— triangular matrix

(6) $I_2 =$ ____

(7) If $A = \begin{bmatrix} -9 & 7 \\ 6 & 4 \end{bmatrix}$ then

$Adj(A) =$ ____

(8) If $A = \begin{bmatrix} 1 \\ 2 \\ -6 \end{bmatrix}$, $B = \begin{bmatrix} 2 & -1 & 5 \end{bmatrix}$

then $AB =$ ____ & $BA =$ ____

(9) $\begin{vmatrix} \log(36) & \frac{1}{2} \\ \log(9) & \frac{1}{2} \end{vmatrix} =$ ____

(10) If $A = A^T$ then A is called ____ matrix

(11) If $A = \begin{bmatrix} 2 & -1 & 6 \\ 3 & 2 & 5 \end{bmatrix}$ then

$A^T =$ ____

(12) If $A = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$ then

$A^2 =$ ____

(13) $\begin{vmatrix} 2 & 0 & 0 \\ 0 & -6 & 0 \\ 0 & 0 & -5 \end{vmatrix} =$ ____

(14) If A is of order 2×3 and B is of order 3×2 then
order of AB = ____
order of BA = ____

(15) Slope of $4x - 3y - 9 = 0$ is ____

(16) What is x-intercept & y-intercept of line $2x + 3y - 1 = 0$?

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(Q-2) Answer the following (3 and 4 marks)

(1) Solve: $2x+3y=7$ $3x+5y=9$ using cramer's rule

(2) If $A=\begin{bmatrix} 2x-3 & x-5 \\ -3 & 5 \end{bmatrix}$ and $A=A^T$ then find x.

(3) If $A=\begin{bmatrix} 3 & 2 & 1 \\ 0 & 1 & 0 \\ 7 & 8 & 9 \end{bmatrix}$, $B=\begin{bmatrix} -1 & -2 & 0 \\ 1 & 1 & -1 \\ 2 & 2 & -2 \end{bmatrix}$ and $C=\begin{bmatrix} 3 & 0 & 5 \\ 6 & 9 & -1 \\ 7 & 8 & -2 \end{bmatrix}$ then find $2(A-2B)+C$

(4) If $A=\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ then verify: $A^2-5A-2I=0$

where I is Identity matrix
O is null matrix

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(5) If $A = \begin{bmatrix} 1 & 2 & 0 \\ -3 & 0 & 4 \end{bmatrix}$,

$B = \begin{bmatrix} 0 & -1 & -3 \\ 3 & 2 & 4 \end{bmatrix}$ then

solve the matrix equation $2(X + A) + 3B = 0$ and find X.

(6) If $A = \begin{bmatrix} 4 & 1 & 3 \\ 2 & 0 & 5 \\ 1 & 3 & 0 \end{bmatrix}$,

$B = \begin{bmatrix} 2 & -1 & 0 \\ 0 & 4 & 3 \\ 2 & 1 & 5 \end{bmatrix}$ then

verify (I) $A + A^T$ is symmetric matrix

(II) $B - B^T$ is skew symmetric matrix

(7) If $A = \begin{bmatrix} -2 & 8 & 5 \\ -6 & 2 & 5 \\ 8 & 7 & 3 \end{bmatrix}$ then find Adj(A)

(8) Solve: $5x + 2y = 4$
$7x + 3y = 5$
using matrix method

(9) Is $l_1 : x + y = 0$ parallel to $l_2 : x - y = 0$?

(10) Find equation of line passing through the point $(-1, 2)$ and having slope $\frac{3}{2}$.

(11) If $l_1 : x - 3y - 8 = 0$ and $l_2 : 2x + 4y - 9 = 0$ then find (I) Slope of l_1 and l_2
(II) slope of l_1 × slope of l_2