EduSahara™ Worksheet

Name : Chapter Based Worksheet

Chapter : Matrices

Grade : ICSE Grade X

1. Which of the following matrices is a 2×2 matrix ?

(i) $\begin{bmatrix} 4 & 6 \\ 8 & 7 \\ 8 & 3 \end{bmatrix}$ (ii) $\begin{bmatrix} 1 & 6 & 8 \\ 7 & 1 & 7 \end{bmatrix}$ (iii) $\begin{bmatrix} 2 & 2 \\ 9 & 7 \end{bmatrix}$ (iv) $\begin{bmatrix} 2 & 3 & 1 \\ 9 & 8 & 2 \\ 2 & 7 & 1 \end{bmatrix}$ (v) $\begin{bmatrix} 8 & 2 & 4 \\ 4 & 7 & 3 \\ 9 & 7 & 6 \end{bmatrix}$

2. Given $A = \begin{bmatrix} -7 & -1 \\ 4 & 6 \end{bmatrix}$ find B such that $AB = BA = A$

(i) $\begin{bmatrix} -1 & 0 \\ 0 & 1 \end{bmatrix}$ (ii) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ (iii) $\begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix}$ (iv) $\begin{bmatrix} 1 & 0 \\ 1 & 1 \end{bmatrix}$ (v) $\begin{bmatrix} 1 & 2 \\ 0 & 1 \end{bmatrix}$

3. Which of the following matrices is a 3×2 matrix ?

(i) $\begin{bmatrix} 4 & 7 & 4 \\ 2 & 7 & 5 \end{bmatrix}$ (ii) $\begin{bmatrix} 7 & 5 & 3 \\ 2 & 1 & 8 \\ 3 & 9 & 1 \end{bmatrix}$ (iii) $\begin{bmatrix} 6 & 8 \\ 1 & 2 \\ 6 & 6 \\ 2 & 3 \end{bmatrix}$ (iv) $\begin{bmatrix} 1 & 8 & 7 \\ 9 & 8 & 6 \\ 2 & 8 & 2 \\ 1 & 8 & 9 \end{bmatrix}$ (v) $\begin{bmatrix} 6 & 8 \\ 2 & 8 \\ 6 & 2 \end{bmatrix}$

4. If A and B are given as below, neither $(A \times B)$ nor $(B \times A)$ is possible for which of the following pairs?

(i) $1 \times 2, 2 \times 3$ (ii) $3 \times 2, 1 \times 2$ (iii) $3 \times 1, 1 \times 3$ (iv) $2 \times 3, 3 \times 1$ (v) $1 \times 2, 2 \times 1$

5. If $A = \begin{bmatrix} 5 & -3 \\ -5 & 7 \end{bmatrix}$, $B = \begin{bmatrix} 5 & 3 \\ 7 & 2 \end{bmatrix}$ and $C = \begin{bmatrix} -6 & -5 \\ -9 & 1 \end{bmatrix}$, then compute $A^2 + BC =$

(i) $\begin{bmatrix} -16 & -58 \\ -120 & 31 \end{bmatrix}$ (ii) $\begin{bmatrix} -17 & -55 \\ -120 & 31 \end{bmatrix}$ (iii) $\begin{bmatrix} -17 & -58 \\ -120 & 30 \end{bmatrix}$ (iv) $\begin{bmatrix} -17 & -58 \\ -122 & 31 \end{bmatrix}$ (v) $\begin{bmatrix} -17 & -58 \\ -120 & 31 \end{bmatrix}$

6. If $A = \begin{bmatrix} 2 & 0 \\ -1 & -6 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & 4 \\ -9 & -1 \end{bmatrix}$, then $A + B =$

(i) $\begin{bmatrix} 8 & 4 \\ -8 & -7 \end{bmatrix}$ (ii) $\begin{bmatrix} 8 & 4 \\ -10 & -9 \end{bmatrix}$ (iii) $\begin{bmatrix} 9 & 4 \\ -10 & -7 \end{bmatrix}$ (iv) $\begin{bmatrix} 8 & 3 \\ -10 & -7 \end{bmatrix}$ (v) $\begin{bmatrix} 8 & 4 \\ -10 & -7 \end{bmatrix}$

7. If $A = \begin{bmatrix} 4 & 2 \\ 6 & 2 \end{bmatrix}$, $B = \begin{bmatrix} -6 & 6 \\ -7 & 5 \end{bmatrix}$ and $C = \begin{bmatrix} -7 & 2 \\ 5 & 9 \end{bmatrix}$, then $A + 6B + 3C =$

(i) $\begin{bmatrix} -53 & 44 \\ -21 & 59 \end{bmatrix}$ (ii) $\begin{bmatrix} -53 & 44 \\ -21 & 61 \end{bmatrix}$ (iii) $\begin{bmatrix} -53 & 44 \\ -22 & 59 \end{bmatrix}$ (iv) $\begin{bmatrix} -53 & 44 \\ -21 & 60 \end{bmatrix}$ (v) $\begin{bmatrix} -53 & 44 \\ -23 & 59 \end{bmatrix}$

8. Which of the following is a column matrix

(i) $\begin{bmatrix} 4 & 5 \end{bmatrix}$ (ii) $\begin{bmatrix} 3 \\ 2 \\ 2 \end{bmatrix}$ (iii) $\begin{bmatrix} 3 & 8 & 8 \end{bmatrix}$ (iv) $\begin{bmatrix} 4 & 3 & 4 & 6 \end{bmatrix}$ (v) $\begin{bmatrix} 3 & 5 & 4 \\ 8 & 5 & 2 \\ 9 & 5 & 8 \end{bmatrix}$

9. Matrix A = $\begin{bmatrix} -3 & -4 & 0 \\ 2 & 2 & 0 \\ -4 & -4 & -2 \end{bmatrix}$ is the additive inverse of

(i) $\begin{bmatrix} 3 & 4 & 0 \\ -2 & -2 & -3 \\ 4 & 4 & 2 \end{bmatrix}$ (ii) $\begin{bmatrix} 3 & 4 & 0 \\ -2 & -2 & 0 \\ 4 & 4 & 2 \end{bmatrix}$ (iii) $\begin{bmatrix} 3 & 4 & 0 \\ -2 & -2 & 0 \\ 4 & 4 & 3 \end{bmatrix}$ (iv) $\begin{bmatrix} 3 & 4 & -1 \\ -2 & -2 & 0 \\ 4 & 4 & 2 \end{bmatrix}$ (v) $\begin{bmatrix} 3 & 4 & 0 \\ -2 & -2 & 0 \\ 4 & 4 & 4 \end{bmatrix}$

10. If A = $\begin{bmatrix} 9 & 2 \\ 0 & 8 \end{bmatrix}$, the value of -A =

(i) $\begin{bmatrix} -12 & -2 \\ 0 & -8 \end{bmatrix}$ (ii) $\begin{bmatrix} -6 & -2 \\ 0 & -8 \end{bmatrix}$ (iii) $\begin{bmatrix} -9 & -2 \\ 0 & -9 \end{bmatrix}$ (iv) $\begin{bmatrix} -9 & -1 \\ 0 & -8 \end{bmatrix}$ (v) $\begin{bmatrix} -9 & -2 \\ 0 & -8 \end{bmatrix}$

11. Which of the following matrices is a 2×3 matrix ?

(i) $\begin{bmatrix} 6 & 7 & 4 & 1 \\ 4 & 7 & 4 & 6 \end{bmatrix}$ (ii) $\begin{bmatrix} 4 & 4 & 8 \\ 5 & 2 & 8 \\ 9 & 1 & 6 \end{bmatrix}$ (iii) $\begin{bmatrix} 4 & 5 & 8 \\ 7 & 7 & 8 \end{bmatrix}$ (iv) $\begin{bmatrix} 3 & 8 \\ 7 & 4 \\ 6 & 1 \end{bmatrix}$ (v) $\begin{bmatrix} 9 & 6 & 8 & 8 \\ 9 & 5 & 3 & 6 \\ 6 & 6 & 2 & 4 \end{bmatrix}$

12. The number of columns in matrix A = $\begin{bmatrix} 6 & 3 \\ 0 & -6 \end{bmatrix}$ is

(i) 4 (ii) 3 (iii) 0 (iv) 1 (v) 2

13. If $(A+B) = 0$, then

a) A is the additive inverse of B
b) B is the additive identity of A
c) A is the additive identity of B
d) B is the additive inverse of A

(i) {b,a} (ii) {b,c,a} (iii) {c,d} (iv) {b,d,a} (v) {a,d}

14. Which of the following matrices is comparable to the given matrix $\begin{bmatrix} 3 & 9 & 7 \\ 3 & 4 & 4 \\ 4 & 7 & 2 \end{bmatrix}$?

(i) $\begin{bmatrix} 4 & 6 & 3 \\ 8 & 6 & 4 \end{bmatrix}$ (ii) $\begin{bmatrix} 3 & 7 & 1 & 2 \\ 5 & 5 & 6 & 2 \\ 9 & 6 & 2 & 3 \\ 9 & 4 & 4 & 4 \\ 3 & 3 & 9 & 8 \end{bmatrix}$ (iii) $\begin{bmatrix} 2 & 4 & 6 & 9 \\ 9 & 8 & 6 & 9 \\ 3 & 8 & 6 & 6 \end{bmatrix}$ (iv) $\begin{bmatrix} 8 & 5 & 7 \\ 7 & 7 & 1 \\ 3 & 3 & 6 \end{bmatrix}$ (v) $\begin{bmatrix} 9 & 9 & 4 \\ 3 & 5 & 5 \\ 6 & 8 & 4 \\ 2 & 2 & 4 \end{bmatrix}$

15. Which of the following is a diagonal matrix ?

(i) $\begin{bmatrix} 0 & 0 & -7 \\ 0 & -9 & 0 \\ -6 & 0 & 0 \end{bmatrix}$ (ii) $\begin{bmatrix} -7 & 0 & 7 \\ 0 & -9 & 0 \\ 0 & 0 & -6 \end{bmatrix}$ (iii) $\begin{bmatrix} -7 & 0 & 0 \\ 0 & -9 & 0 \\ 7 & 0 & -6 \end{bmatrix}$ (iv) $\begin{bmatrix} -7 & 0 & 0 \\ 0 & -9 & 0 \\ 0 & 0 & -6 \end{bmatrix}$ (v) $\begin{bmatrix} -7 & 0 & -7 \\ 0 & -9 & 0 \\ -6 & 0 & -6 \end{bmatrix}$

16. If $A = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix}$ and $B = \begin{bmatrix} b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{bmatrix}$,

then $(A+B) =$

(i) $\begin{bmatrix} a_{11}+b_{11} & a_{12}+b_{12} & a_{13}+b_{13} \\ a_{21}+b_{21} & a_{22}+b_{22} & a_{23}+b_{23} \\ a_{31}+b_{31} & a_{32}+b_{32} & a_{33}+b_{33} \end{bmatrix}$ (ii) $\begin{bmatrix} a_{11}+b_{11} & a_{21}+b_{21} & a_{31}+b_{31} \\ a_{12}+b_{12} & a_{22}+b_{22} & a_{32}+b_{32} \\ a_{13}+b_{13} & a_{23}+b_{23} & a_{33}+b_{33} \end{bmatrix}$

(iii) $\begin{bmatrix} a_{11}+b_{11} & a_{21}+b_{12} & a_{31}+b_{13} \\ a_{12}+b_{21} & a_{22}+b_{22} & a_{32}+b_{23} \\ a_{13}+b_{31} & a_{23}+b_{32} & a_{33}+b_{33} \end{bmatrix}$

(iv) $\begin{bmatrix} a_{11}b_{11}+a_{12}b_{21}+a_{13}b_{31} & a_{11}b_{12}+a_{12}b_{22}+a_{13}b_{32} & a_{11}b_{13}+a_{12}b_{23}+a_{13}b_{33} \\ a_{21}b_{11}+a_{22}b_{21}+a_{23}b_{31} & a_{21}b_{12}+a_{22}b_{22}+a_{23}b_{32} & a_{21}b_{13}+a_{22}b_{23}+a_{23}b_{33} \\ a_{31}b_{11}+a_{32}b_{21}+a_{33}b_{31} & a_{31}b_{12}+a_{32}b_{22}+a_{33}b_{32} & a_{31}b_{13}+a_{32}b_{23}+a_{33}b_{33} \end{bmatrix}$

17. If A and B are given as below, neither $(A \times B)$ nor $(B \times A)$ is possible for which of the following pairs?

(i) 3×1 , 1×3 (ii) 1×3 , 2×3 (iii) 1×2 , 2×1 (iv) 1×2 , 2×3 (v) 2×3 , 3×1

18. Which of the following matrices is a 1×2 matrix ?

(i) $\begin{bmatrix} 8 & 4 \end{bmatrix}$ (ii) $\begin{bmatrix} 1 & 9 & 9 \\ 9 & 5 & 6 \end{bmatrix}$ (iii) $\begin{bmatrix} 9 & 8 & 6 \end{bmatrix}$ (iv) $\begin{bmatrix} 5 & 3 \\ 5 & 5 \end{bmatrix}$ (v) $\begin{bmatrix} 9 \\ 9 \end{bmatrix}$

19. If $A = \begin{bmatrix} 9 & 2 \\ 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 9 & 3 \\ 5 & 9 \end{bmatrix}$, find $A^2 - B^2$

(i) $\begin{bmatrix} -11 & -26 \\ -61 & -67 \end{bmatrix}$ (ii) $\begin{bmatrix} -11 & -28 \\ -62 & -67 \end{bmatrix}$ (iii) $\begin{bmatrix} -11 & -26 \\ -62 & -67 \end{bmatrix}$ (iv) $\begin{bmatrix} -11 & -26 \\ -60 & -67 \end{bmatrix}$ (v) $\begin{bmatrix} -11 & -26 \\ -63 & -67 \end{bmatrix}$

20. The order of matrix $A = \begin{bmatrix} -3 & -4 \\ 4 & 0 \end{bmatrix}$ is

(i) 2×1 (ii) 1×2 (iii) 2×3 (iv) 2×2 (v) 3×2

21. If $A = \begin{bmatrix} 0 & -1 \\ -2 & 0 \end{bmatrix}$, then find AI

(i) $\begin{bmatrix} 0 & -1 \\ -2 & -2 \end{bmatrix}$ (ii) $\begin{bmatrix} 0 & -1 \\ -2 & 1 \end{bmatrix}$ (iii) $\begin{bmatrix} -1 & -1 \\ -2 & 0 \end{bmatrix}$ (iv) $\begin{bmatrix} 0 & -1 \\ -2 & 0 \end{bmatrix}$ (v) $\begin{bmatrix} 3 & -1 \\ -2 & 0 \end{bmatrix}$

22. The order of matrix $A = \begin{bmatrix} -5 \\ -3 \end{bmatrix}$ is

(i) 2×2 (ii) 2×1 (iii) 3×1 (iv) 1×2 (v) 1×1

23. If $A = \begin{bmatrix} 3 & 8 \\ 3 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 7 \\ 2 & 5 \end{bmatrix}$, find $A^2 + B^2 + 2AB$

(i) $\begin{bmatrix} 106 & 226 \\ 64 & 142 \end{bmatrix}$ (ii) $\begin{bmatrix} 106 & 226 \\ 64 & 144 \end{bmatrix}$ (iii) $\begin{bmatrix} 106 & 226 \\ 64 & 145 \end{bmatrix}$ (iv) $\begin{bmatrix} 106 & 226 \\ 63 & 144 \end{bmatrix}$ (v) $\begin{bmatrix} 106 & 226 \\ 64 & 147 \end{bmatrix}$

24. Which of the following pairs of matrices can be multiplied?

(i) $\begin{bmatrix} 5 & -1 \\ 2 & 6 \end{bmatrix}, \begin{bmatrix} 0 & -6 \\ -7 & 2 \\ 3 & -5 \end{bmatrix}$ (ii) $\begin{bmatrix} -3 & -6 & -6 \end{bmatrix}, \begin{bmatrix} 6 & 5 & -8 \\ -5 & 9 & 7 \end{bmatrix}$ (iii) $\begin{bmatrix} 5 & -1 \\ 2 & 6 \end{bmatrix}, \begin{bmatrix} 9 & -3 \end{bmatrix}$ (iv) $\begin{bmatrix} -5 \\ -2 \\ -6 \end{bmatrix}, \begin{bmatrix} 0 & -6 \\ -7 & 2 \\ 3 & -5 \end{bmatrix}$

(v) $\begin{bmatrix} 6 & 5 & -8 \\ -5 & 9 & 7 \end{bmatrix}, \begin{bmatrix} -5 \\ -2 \\ -6 \end{bmatrix}$

25. Which of the following are true?

a) A zero matrix is a square matrix
b) A 1×1 matrix has only one element
c) A scalar matrix has all elements with same value
d) A unit matrix has only one row and one column

(i) {a,d,b} (ii) {c,d} (iii) {b,d} (iv) {a,b} (v) {a,c,b}

Assignment Key

1) (iii)	2) (ii)	3) (v)	4) (ii)	5) (v)	6) (v)
7) (i)	8) (ii)	9) (ii)	10) (v)	11) (iii)	12) (v)
13) (v)	14) (iv)	15) (iv)	16) (i)	17) (ii)	18) (i)
19) (iii)	20) (iv)	21) (iv)	22) (ii)	23) (ii)	24) (v)
25) (iii)					