EduSahara™ Assignment

Name : Matrix Concepts

Chapter : Matrices

Grade : ICSE Grade X



1. Find the transpose of matrix A = $\begin{bmatrix} -2 & 1 \\ 1 & 7 \end{bmatrix}$

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

2. Which of the following is an identity matrix ?

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

3. The number of rows in matrix A = $\begin{bmatrix} 6 & 5 & 6 \\ 5 & 5 & 4 \\ 5 & 4 & 4 \end{bmatrix}$ is

   (i) 5 (ii) 4 (iii) 3 (iv) 2 (v) 1

4. The number of columns in matrix A = $\begin{bmatrix} 6 & 3 \\ 5 & -7 \end{bmatrix}$ is

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

5. The order of matrix A = $\begin{bmatrix} 2 \\ -4 \\ -2 \end{bmatrix}$ is

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

6. Which of the following are true?

   a) An identity matrix is a square matrix
   b) A row matrix is a square matrix
   c) A null matrix is a square matrix
   d) A column matrix is a square matrix

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

7. Which of the following are true?

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

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

8. Which of the following are true?

a) A rectangular matrix cannot be symmetric
b) If a matrix is symmetric, then it is a square matrix
c) A matrix is symmetric if the principal diagonal elements are same
d) If a matrix is symmetric then it is equal to its transpose

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

9. If the transpose of a matrix is equal to its additive inverse, that matrix is called ____?

(i) symmetric matrix (ii) scalar matrix (iii) skew symmetric matrix (iv) identity matrix

10. Which of the following are true ?

a) A square matrix whose determinant is zero is called a singular matrix
b) A square matrix whose determinant is zero is called a non-singular matrix
c) Only square matrices have determinants
d) Rectangular matrices can also have determinants

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

11. If the elements of matrix A are multiplied with -1 , we get

(i) additive inverse of A (ii) additive identity of A (iii) multiplicative identity of A

(iv) multiplicative inverse of A

12. If the elements of matrix A are multiplied with 0 , we get

(i) multiplicative identity of A (ii) multiplicative inverse of A (iii) additive inverse of A

(iv) additive identity of A

13. Which of the following are true?

a) An identity matrix is a scalar matrix
b) An identity matrix is a square matrix
c) A scalar matrix is an identity matrix
d) A null matrix is a scalar matrix

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

14. A $3 \times 4$ matrix has

a) 3 rows and 4 columns
b) 7 rows and 4 columns
c) 3 rows and 12 columns
d) 4 rows and 3 columns

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

15. Which of the following are true for matrices A and B ?

a) If $AB = 0$, $A = 0$ or $B = 0$ or both A and B are zero matrices
b) The orders of $(A \times B)$ and $(B \times A)$ are same
c) If A and B can be added, they must have the same order
d) If A and B can be multiplied, they must have the same order

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

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

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

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

17. Which of the following is a square matrix?

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

18. Which of the following is a rectangular matrix?

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

19. Which of the following are true ?

a) If matrices A & B can be multiplied, they must have the same order
b) The order of $(A\times B)$ and $(B\times A)$ is same
c) If AB = 0, then A = 0 or B = 0 or both A & B are 0
d) If matrices A & B can be added, they must have the same order

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

20. Which of the following are true for matrices A, B and C ?

a) $(A\times I)=(I\times A)=I$
b) $A\times(B\times C)=(A\times B)\times C$
c) $(A\times I)=(I\times A)=A$
d) $(A\times B)=(B\times A)$
e) $(A+B)\times C=(A\times B)+(A\times C)$
f) $A\times(B+C)=(A\times B)+(A\times C)$

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

21. Which of the following is a row matrix

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

22. Which of the following is a column matrix

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

23. Which of the following is a diagonal matrix ?

(i) $\begin{bmatrix} -8 & 0 & 0 \\ 0 & -7 & 0 \\ 9 & 0 & -5 \end{bmatrix}$ (ii) $\begin{bmatrix} 0 & 0 & -8 \\ 0 & -7 & 0 \\ -5 & 0 & 0 \end{bmatrix}$ (iii) $\begin{bmatrix} -8 & 0 & -8 \\ 0 & -7 & 0 \\ -5 & 0 & -5 \end{bmatrix}$ (iv) $\begin{bmatrix} -8 & 0 & 9 \\ 0 & -7 & 0 \\ 0 & 0 & -5 \end{bmatrix}$ (v) $\begin{bmatrix} -8 & 0 & 0 \\ 0 & -7 & 0 \\ 0 & 0 & -5 \end{bmatrix}$

24. The principal diagonal elements of the given matrix $\begin{bmatrix} 8 & 7 \\ -8 & 1 \end{bmatrix}$ are

(i) 8 , 1 (ii) 7 , 1 (iii) 8 , -8 (iv) 7 , -8

25. The principal diagonal elements of the given matrix $\begin{bmatrix} 8 & -8 & 7 \\ 6 & 1 & 4 \\ -6 & 9 & -4 \end{bmatrix}$ are

(i) 7 , 1 , -6 (ii) -8 , 6 , 9 (iii) 8 , 7 , 1 (iv) 8 , 1 , -4

26. If $A = \begin{bmatrix} -1 & 2 \\ -7 & -6 \end{bmatrix}$ and the sum of the values of elements of matrix kA = -72 , find k

(i) 4 (ii) 7 (iii) 5 (iv) 9 (v) 6

## Assignment Key

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|---|---|---|---|---|---|
| 1) (ii) | 2) (iv) | 3) (iii) | 4) (ii) | 5) (iv) | 6) (iv) |
| 7) (i) | 8) (ii) | 9) (iii) | 10) (v) | 11) (i) | 12) (iv) |
| 13) (ii) | 14) (iv) | 15) (iv) | 16) (v) | 17) (iii) | 18) (ii) |
| 19) (iv) | 20) (iii) | 21) (v) | 22) (iii) | 23) (v) | 24) (i) |
| 25) (iv) | 26) (v) | | | | |