Topic: Chap 3 (Matrices)

Important Problems for Practice

For 1 mark

Multiple Choice Question(MCQ)

Write the correct option in the following questions:-

1. If A and B are square matrices of the same order, then (A + B) (A – B) is equal to
   (A) $A^2 - B^2$ (B) $A^2 - BA - AB - B^2$
   (C) $A^2 - B^2 + BA - AB$ (D) $A^2 - BA + B^2 + AB$
2. A =$[a_{ij}]_{mXn}$ is a square matrix, if
   (A) m < n (B) m > n (C) m = n (D) None of these
3. If $A = \begin{bmatrix} 1 & -2 & 3 \\ 2 & 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -3 \\ 2 & 0 \\ 1 & 2 \end{bmatrix}$, then
   (A) only AB is defined (B) only BA is defined
   (C) AB and BA both are defined (D) AB and BA both are not defined

4. The number of all possible matrices of order 2 × 3 with each entry 2 or 4 is:
   (A) 48 (B) 36 (C) 216 (D) 64
5. The matrix $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 4 & 0 \\ 0 & 0 & 9 \end{bmatrix}$ is a
   (A) identity matrix (B) symmetric matrix
   (C) skew symmetric matrix (D) none of these
6. The matrix $A = \begin{bmatrix} 0 & 0 & 5 \\ 0 & 5 & 0 \\ 5 & 0 & 0 \end{bmatrix}$ is a
   (A) scalar matrix (B) diagonal matrix
   (C) unit matrix (D) square matrix

7. The number of all possible matrices of order 2 × 3 with each entry 1, 2 or 4 is:
   (A) 48 (B) 24 (C) 729 (D) 216

8. If A, B are symmetric matrices of same order, then AB – BA is a
   (A) Skew symmetric matrix (B) Symmetric matrix
   (C) Zero matrix (D) Identity matrix
9. If A and B are symmetric matrices of the same order, then (AB' –BA') is a
   (A) Skew symmetric matrix (B) Null matrix
   (C) Symmetric matrix (D) None of these
10. Total number of possible matrices of order 3 × 3 with each entry 2 or 0 is
    (A) 9 (B) 27 (C) 81 (D) 512

11. Which of the given values of x and y make the following pair of matrices equal
$\begin{bmatrix} 3x+7 & 5 \\ y+1 & 2-3x \end{bmatrix}, \begin{bmatrix} 0 & y-2 \\ 8 & 4 \end{bmatrix}$
(A) $x = -\frac{1}{3}, y = 7$ (B) Not possible to find
(C) $y = 7, x = -\frac{2}{3}$ (D) $x = -\frac{1}{3}, y = -\frac{2}{3}$
12. If $\begin{bmatrix} 2x+y & 4x \\ 5x-7 & 4x \end{bmatrix} = \begin{bmatrix} 7 & 11y+1 \\ y+7 & x+6 \end{bmatrix}$, then the value of x + y is
(A) x = 3, y = 1 (B) x = 2, y = 3
(C) x = 2, y = 4 (D) x = 3, y = 3
13. If A and B are two matrices of the order 3 × m and 3 × n, respectively, and m = n, then the order of matrix (5A – 2B) is
(A) m × 3 (B) 3 × 3 (C) m × n (D) 3 × n
14. If A= $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$, then A^2 is equal to
(A) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$ (B) $\begin{bmatrix} 1 & 0 \\ 1 & 0 \end{bmatrix}$ (C) $\begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix}$ (D) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
15. If $A = \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$ then A + A′ = I, if the value of α is
(A) $\frac{\pi}{6}$ (B) $\frac{\pi}{3}$ (C) π (D) $\frac{3\pi}{2}$
16. If A = $\begin{bmatrix} \alpha & \beta \\ \gamma & -\alpha \end{bmatrix}$ is such that A² = I, then
(A) 1 + α² + βγ = 0 (B) 1 – α² + βγ = 0
(C) 1 – α² – βγ = 0 (D) 1 + α² – βγ = 0
17. If matrix $A = [a_{ij}]_{2X2}$, where $\begin{cases} a_{ij} = 1 \text{ if } i \neq j \\ a_{ij} = 0 \text{ if } i = j \end{cases}$ then A^2 is equal to
(A) I (B) A (C) 0 (D) None of these
18. The matrix $\begin{bmatrix} 0 & -5 & 8 \\ 5 & 0 & 12 \\ -8 & -12 & 0 \end{bmatrix}$ is a
(A) diagonal matrix (B) symmetric matrix
(C) skew symmetric matrix (D) scalar matrix
19. If A is matrix of order m × n and B is a matrix such that AB′ and B′A are both defined, then order of matrix B is
(A) m × m (B) n × n (C) n × m (D) m × n
20. If A and B are matrices of same order, then (AB′–BA′) is a
(A) skew symmetric matrix (B) null matrix
(C) symmetric matrix (D) unit matrix
21. If the matrix A is both symmetric and skew symmetric, then
(A) A is a diagonal matrix (B) A is a zero matrix
(C) A is a square matrix (D) None of these
22. If A is square matrix such that $A^2 = A$, then $(I + A)^3 - 7A$ is equal to
(A) A (B) I – A (C) I (D) 3A
23. If A is a square matrix such that $A^2 = I$, then $(A - I)^3 + (A + I)^3 - 7A$ is equal to
(A) A (B) I – A (C) I + A (D) 3A
24. For any two matrices A and B, we have
(A) AB = BA (B) AB ≠ BA (C) AB = O (D) None of the above
25. Matrices A and B will be inverse of each other only if
(A) AB = BA (B) AB = BA = 0 (C) AB = 0, BA = I (D) AB = BA = I

Answer Key

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
C	C	C	D	B	D	C	A	A	D	B	A	D	D	B	C	A	C	D	A	B	C	A	D	D

For online MCQ test use below link:-

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