



Answer Any TEN of the Following

$10 \times 1 = 10M$

1. Which of the following matrices is a Circulant matrix?

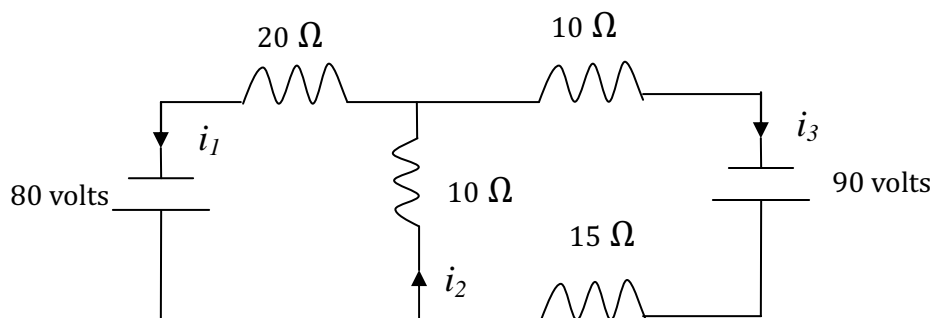
A. $\begin{bmatrix} a_1 & a_2 & a_3 \\ a_3 & a_2 & a_1 \\ a_2 & a_3 & a_1 \end{bmatrix}$

B. $\begin{bmatrix} a_1 & a_2 & a_3 \\ a_2 & a_3 & a_1 \\ a_3 & a_1 & a_2 \end{bmatrix}$

C. $\begin{bmatrix} a_1 & a_2 & a_3 \\ a_3 & a_1 & a_2 \\ a_2 & a_3 & a_1 \end{bmatrix}$

D. None of the above

2. In the electrical network below, the current values i_1 , i_2 and i_3 respectively are



- A. 1,2,3
- B. 1,2,1
- C. 3,6,3
- D. 2,4,2

3. If $A = [a_{ij}]_{n \times n}$ is a Skew-Symmetric matrix, then $\text{trace}(A)$ is

- A. 0
- B. 1
- C. n
- D. 2n

4. If A is a square matrix of order 3, then $\det(2A)$ is equal to

- A. $2 \det A$
- B. $3 \det A$
- C. $8 \det A$
- D. $9 \det A$

5. If A is an Involutory matrix, then $\frac{1}{2}(A - I)$ is

- A. Idempotent
- B. Involutory
- C. Nilpotent
- D. None of the above

6. If A and B are Idempotent matrices of same order, then

- A. AB is Idempotent
- B. $I - A$ and $I - B$ are Idempotent
- C. $I - AB$ is Idempotent

D. All the above

7. Determinant of odd order $n \times n$ Skew-Symmetric matrix is

A. $(-1)^n$

B. 1

C. n

D. 0

8. Which of the following matrices is a Nilpotent matrix?

A. $\begin{bmatrix} 1 & 2 & -1 \\ 0 & 2 & 3 \\ 0 & 0 & 4 \end{bmatrix}$

B. $\begin{bmatrix} 5 & -3 & 2 \\ 15 & -9 & 6 \\ 10 & -6 & 4 \end{bmatrix}$

C. $\begin{bmatrix} 0 & 1 & 4 \\ 1 & 1 & -2 \\ 0 & 1 & -1 \end{bmatrix}$

D. $\begin{bmatrix} 0 & 0 & 2 \\ 1 & 1 & -2 \\ 0 & 0 & 1 \end{bmatrix}$

9. The matrix $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & -1 \\ 3 & -1 & 4 \end{bmatrix}$ is

A. Symmetric matrix

B. Skew-Symmetric matrix

C. Orthogonal matrix

D. Involutary matrix

10. If A , B and C are any square matrices of same order, then which of the following is not true?

A. $A(B + C) = AB + AC$

B. $(A + B)^T = A^T + B^T$

C. $(AB)C = A(BC)$

D. $AB = BA$

11. If A and B are Symmetric matrices, then $AB - BA$ is a

A. Symmetric matrix

B. Skew-Symmetric matrix

C. Hermitian matrix

A. Skew-Hermitian matrix

12. The diagonal elements of a Hermitian matrix are

A. Real

B. Zero

C. Purely imaginary

D. None of the above

KEY TO WEEKLY TEST-2

- 1. C
- 2. D
- 3. A
- 4. C
- 5. D
- 6. B
- 7. D
- 8. B
- 9. A
- 10. D
- 11. B
- 12. A