



UNITY TRAINING
ACADEMY FOR DDCET

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Practice Set 1 **Solution**

Mathematics

DETERMINANT AND MATRICES

Topics :

1. Determinant and its value up to 3rd order (Without properties). 2. Concept of a Matrix. 3. Types of Matrices. 4. Addition, Subtraction and multiplication by scalar of matrices. 5. Product of two matrices. 6. Adjoint and Inverse of a matrix of order 2×2 . 7. Solution of Simultaneous linear equations of two variables

DDCET final exam weightage of this topic : 4 Question (8 Marks)

**Total Practice sets
of this topic :**

$2 \text{ (sets) } \times 30 \text{ (questions) } = 60 \text{ Questions}$

**Total Practice tests
of this topic :**

$2 \text{ (exams) } \times 20 \text{ (questions) } = 40 \text{ Questions}$

**Offline / Online
during lecture :**

$4 \text{ (lectures) } \times 50 \text{ (Questions) } = 200 \text{ Question}$

**Total 300 Questions to
practice this topic**



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Section 2:

1. Determinant
2. Matrices

1. Find the value of $\begin{vmatrix} 2 & 5 \\ 3 & 6 \end{vmatrix}$

- a. -3✓
- b. -2
- c. 3
- d. 2

2. $\begin{vmatrix} x & y \\ -y & x \end{vmatrix} = \text{_____}$

- a. $2x+2y$
- b. $x^2 + y^2$ ✓
- c. $x^2 - y^2$
- d. $(x+y)^2$

3. $\begin{vmatrix} \log_3 2 & 1 \\ 1 & \log_2 3 \end{vmatrix} = \text{_____}$

- a. 1
- b. -1
- c. 0✓
- d. 2

4. Find the value of $\begin{vmatrix} \sin\theta & -\cos\theta \\ \cos\theta & \sin\theta \end{vmatrix}$

- a. 0
- b. 1✓
- c. -1
- d. θ

5. Find the value of $\begin{vmatrix} x+1 & x \\ x & x-1 \end{vmatrix}$

- a. 1
- b. $-x^2$
- c. -1✓
- d. x^2

6. Find the value of $\begin{vmatrix} \cot\theta & \operatorname{cosec}\theta \\ \operatorname{cosec}\theta & \cot\theta \end{vmatrix}$

- a. 0
- b. 1
- c. -1✓
- d. θ

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7. If $\begin{vmatrix} a & c \\ b & d \end{vmatrix} = 5$ then find the value of $\begin{vmatrix} 3a & 2c \\ 3b & 2d \end{vmatrix} = \underline{\hspace{2cm}}$.

- a. 30✓
- b. 20
- c. 15
- d. 10

8. If $\begin{vmatrix} 2x & 5 \\ 4 & 1 \end{vmatrix} = 0$ then find the value of x

- a. 10✓
- b. 20
- c. 4
- d. 5

9. If $\begin{vmatrix} 3x & 6 \\ 2 & x \end{vmatrix} = 0$ then find the value of x

- a. ± 2 ✓
- b. 2
- c. ± 4
- d. 0

10. If $\begin{vmatrix} x-1 & -3 \\ 3 & x+1 \end{vmatrix} = 8$ then x =

- a. ± 4
- b. 4
- c. 0✓
- d. 1

11. Find the value of $\begin{vmatrix} 2 & 3 & 4 \\ 5 & 6 & 7 \\ 1 & 0 & 2 \end{vmatrix} =$

- a. 9
- b. -9✓
- c. -3
- d. 3

12. If $\begin{vmatrix} x & 0 & 1 \\ 3 & 5 & 2 \\ 2 & 1 & 2 \end{vmatrix} = 1$ then x = $\underline{\hspace{2cm}}$

- a. 1✓
- b. -1
- c. -2
- d. 2

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Section 2:

1. Determinant
2. Matrices

13. The representation of Identity matrix of order 2 (I_2) is:

- a. $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$
- b. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ ✓
- c. $\begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$
- d. $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$

14. If A is non-singular matrix, then _____.

- a. $A^T = A$
- b. $A^T = -A$
- c. $|A| = 0$
- d. $|A| \neq 0$ ✓

15. The order of matrix $\begin{bmatrix} 2 & 3 & 4 \\ 1 & 0 & 6 \end{bmatrix}$ is

- a. 2×3 ✓
- b. 3×2
- c. 3×2
- d. 2×2

16. If $\begin{bmatrix} x+y & 2 \\ 3 & x-y \end{bmatrix} = \begin{bmatrix} 6 & 2 \\ 3 & 4 \end{bmatrix}$ then find x and y

- a. $x = 5$ and $y = -1$
- b. $x = 5$ and $y = 1$ ✓
- c. $x = 2$ and $y = 5$
- d. $x = -5$ and $y = -1$

17. If $A = \begin{bmatrix} 2a-3 & a-4 \\ 5 & 2 \end{bmatrix}$ is a symmetric matrix then $a =$ _____

- a. 0
- b. 1
- c. 9 ✓
- d. -1

18. If $AB = I$ then matrix B = _____

- a. A
- b. A^{-1} ✓
- c. A^T
- d. Unit matrix

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Section 2:

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19. If $A = \begin{bmatrix} a & b \\ c & -d \end{bmatrix}$ then $A^T =$ _____

- a. $\begin{bmatrix} a & -d \\ c & b \end{bmatrix}$
- b. $\begin{bmatrix} a & -d \\ b & c \end{bmatrix}$
- c. $\begin{bmatrix} a & c \\ b & -d \end{bmatrix}$ ✓
- d. $\begin{bmatrix} a & b \\ -d & c \end{bmatrix}$

20. Correct representation of Diagonal matrix is:

- a. $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 5 & 1 \\ 0 & 0 & 1 \end{bmatrix}$
- b. $\begin{bmatrix} 2 & 0 & 1 \\ 0 & 5 & 0 \\ 0 & 0 & 0 \end{bmatrix}$
- c. $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 5 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ ✓
- d. $\begin{bmatrix} 2 & 0 & 0 \\ 0 & 0 & 1 \\ 0 & 0 & 1 \end{bmatrix}$

21. The determinant of Identity matrix is:

- a. 1 ✓
- b. 0
- c. -1
- d. Not define

22. _____ is a skew-symmetric matrix.

- a. $\begin{bmatrix} 3 & 2 \\ -2 & 3 \end{bmatrix}$
- b. $\begin{bmatrix} 0 & -2 \\ 2 & 0 \end{bmatrix}$ ✓
- c. $\begin{bmatrix} 0 & 2 \\ 2 & 0 \end{bmatrix}$
- d. $\begin{bmatrix} 3 & -2 \\ -2 & -3 \end{bmatrix}$

23. If A is a square matrix then $A - A^T$ is a _____ matrix.

- a. Diagonal
- b. Column
- c. Symmetric
- d. Skew-Symmetric ✓

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Section 2:

1. Determinant
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24. If A is a square matrix then $A+A^T$ is a _____ matrix.

- a. Diagonal
- b. Column
- c. **Symmetric**
- d. Skew-Symmetric

25. The identity matrix for addition is

- a. **$\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$** ✓
- b. $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$
- c. $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$
- d. $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$

26. Find the value of $\begin{bmatrix} 2 & -4 \\ 5 & 2 \end{bmatrix} + \begin{bmatrix} -6 & 2 \\ 4 & 7 \end{bmatrix}$.

- a. **$\begin{bmatrix} -4 & -2 \\ 9 & 9 \end{bmatrix}$** ✓
- b. $\begin{bmatrix} 4 & 2 \\ -9 & -9 \end{bmatrix}$
- c. $\begin{bmatrix} 4 & 2 \\ 9 & 9 \end{bmatrix}$
- d. $\begin{bmatrix} 4 & -2 \\ 9 & 9 \end{bmatrix}$

27. Find the value of $2\begin{bmatrix} 4 & -7 \\ 2 & -3 \end{bmatrix} - 3\begin{bmatrix} -2 & 3 \\ 2 & 4 \end{bmatrix}$.

- a. $\begin{bmatrix} 14 & 23 \\ -2 & 18 \end{bmatrix}$
- b. $\begin{bmatrix} 2 & -5 \\ 10 & 6 \end{bmatrix}$
- c. $\begin{bmatrix} 14 & 23 \\ 2 & 18 \end{bmatrix}$
- d. **$\begin{bmatrix} 14 & -23 \\ -2 & -18 \end{bmatrix}$** ✓

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28. If $A = \begin{bmatrix} 1 & 3 \\ 4 & -2 \end{bmatrix}$ then $3A - 2I =$

- a. $\begin{bmatrix} 1 & 9 \\ 12 & 8 \end{bmatrix}$
- b. $\begin{bmatrix} 1 & 9 \\ 12 & -8 \end{bmatrix}$ ✓
- c. $\begin{bmatrix} 3 & 9 \\ 12 & -6 \end{bmatrix}$
- d. $\begin{bmatrix} -1 & 9 \\ 12 & 8 \end{bmatrix}$

29. If $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$, then find A^2

- a. $\begin{bmatrix} 7 & 10 \\ 15 & 22 \end{bmatrix}$
- b. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$
- c. $\begin{bmatrix} 7 & 15 \\ 10 & 22 \end{bmatrix}$ ✓
- d. $\begin{bmatrix} 15 & 10 \\ 7 & 22 \end{bmatrix}$

30. If order of matrix A is 2×3 and matrix B is 3×2 , then order of $(A \times B)$ is

- a. 2×3
- b. 3×2
- c. 2×2 ✓
- d. 3×3

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