UNITY TRAINING
ACADEMY FOR DDCET

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Practice Set 1

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 2X2. 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 (sets) x 30 (questions) = 60 Questions

Total Practice tests of this topic : 2 (exams) x 20 (questions) = 40 Questions

Offline / Online during lecture : 4 (lectures) X 50 (Questions) = 200 Question

DDCET 2025

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

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

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

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 $\begin{vmatrix} cot\theta & cosec\theta \\ cosec\theta & cot\theta \end{vmatrix}$

a. 0
b. 1
c. -1
d. θ

Section 2:

1. Determinant
2. Matrices

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

   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 = _____

    a. 1
    b. -1
    c. -2
    d. 2

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 $\begin{bmatrix}\mathbf{2} & \mathbf{3} & \mathbf{4}\\\mathbf{1} & \mathbf{0} & \mathbf{6}\end{bmatrix}$ is
a. 2 x 3
b. 3 x 2
c. 3 x 2
d. 2 x 2

16. If $\begin{bmatrix}\boldsymbol{x+y} & \mathbf{2}\\\mathbf{3} & \boldsymbol{x-y}\end{bmatrix} = \begin{bmatrix}\mathbf{6} & \mathbf{2}\\\mathbf{3} & \mathbf{4}\end{bmatrix}$ 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 = $\begin{bmatrix}\boldsymbol{2a-3} & \boldsymbol{a-4}\\\mathbf{5} & \mathbf{2}\end{bmatrix}$ 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

Section 2:

1. Determinant
2. Matrices

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

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. $\begin{bmatrix}14 & -23\\-2 & -18\end{bmatrix}$

Section 2:
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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 2x3 and matrix B is 3x2, then order of (AxB) is
a. 2 x3
b. 3 x 2
c. 2 x 2
d. 3 x 3