# Unit 3: Matrices and Determinants

SSC-II Mathematics (Federal Board, National Book Foundation) | 36 MCQs

Choose the correct answer. The correct option is shown in **bold**. Each question carries one mark.

Matrices are written row by row; rows are separated by a semicolon (;). For example, [1 2; 3 4] has rows (1, 2) and (3, 4).

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**1.** The order of the matrix [1 2 3; 4 5 6] is

**A. 2 × 3** B. 6 × 1
C. 3 × 2 D. 2 × 2

**2.** A matrix having an equal number of rows and columns is called a

A. column matrix **B. square matrix**
C. row matrix D. null matrix

**3.** The matrix [1 2 3] is a

A. column matrix B. square matrix
**C. row matrix** D. identity matrix

**4.** A matrix in which every element is zero is called a

A. singular matrix B. scalar matrix
C. identity matrix **D. null matrix**

**5.** The identity matrix of order 2 is

**A. [1 0; 0 1]** B. [0 0; 0 0]
C. [0 1; 1 0] D. [1 1; 1 1]

**6.** [1 2; 3 4] + [2 0; 1 1] equals

A. [3 2; 3 5] B. [3 2; 4 4]
C. [2 0; 3 4] **D. [3 2; 4 5]**

**7.** [5 3; 2 1] − [1 1; 1 1] equals

A. [4 4; 1 0] B. [6 4; 3 2]
**C. [4 2; 1 0]** D. [4 2; 1 1]

**8.** 3[1 2; 0 −1] equals

A. [3 6; 0 3] **B. [3 6; 0 −3]**
C. [4 5; 3 2] D. [3 2; 0 −1]

**9.** The transpose of [1 2; 3 4] is

**A. [1 3; 2 4]** B. [4 2; 3 1]
C. [4 3; 2 1] D. [1 2; 3 4]

**10.** The additive inverse of [1 −2; 3 0] is

A. [−1 −2; 3 0] **B. [−1 2; −3 0]**
C. [1 2; −3 0] D. [0 1; −2 3]

**11.** [1 2; 3 4] × [1 0; 0 1] equals

A. [4 3; 2 1]
B. [0 0; 0 0]
**C. [1 2; 3 4]**
D. [1 0; 0 4]

**12.** [1 2; 0 1] × [3 1; 1 0] equals

A. [4 3; 1 1]
B. [5 1; 0 0]
C. [3 2; 0 0]
**D. [5 1; 1 0]**

**13.** [2 3; 1 4] × [1; 2] equals

A. [9; 8]
B. [5; 6]
**C. [8; 9]**
D. [2; 8]

**14.** If [2 0; 0 2] is multiplied by itself, the result is

A. [2 0; 0 2]
**B. [4 0; 0 4]**
C. [4 4; 4 4]
D. [0 0; 0 0]

**15.** The product AB of two matrices is defined only if

**A. number of columns of A = number of rows of B**
B. number of rows of A = number of rows of B
C. A and B are both square
D. number of columns of A = number of columns of B

**16.** If A is of order 2 × 3 and B is of order 3 × 2, then AB is of order

A. 3 × 2
B. 2 × 3
C. 3 × 3
**D. 2 × 2**

**17.** The determinant of [a b; c d] is

A. ac − bd
B. ad + bc
**C. ad − bc**
D. ab − cd

**18.** The determinant of [3 2; 1 4] is

A. −10
**B. 10**
C. 12
D. 14

**19.** The determinant of [2 4; 1 2] is

**A. 0**
B. 8
C. 4
D. −4

**20.** The determinant of the identity matrix of order 2 is

A. −1
B. 2
C. 0
**D. 1**

**21.** A matrix is said to be singular if its determinant is

A. negative
B. one
**C. zero**
D. positive

**22.** Which of the following matrices is singular?

A. [3 1; 2 2]
**B. [2 4; 1 2]**
C. [1 0; 0 1]
D. [2 1; 1 1]

**23.** If |x 2; 3 4| = 2, then x equals

**A. 2** B. −2

C. 4 D. 1

**24.** The adjoint of [a b; c d] is

A. [d b; c a] B. [−a −b; −c −d]

C. [a −b; −c d] **D. [d −b; −c a]**

**25.** The inverse of a non-singular matrix A is given by

A. |A| adj A **B. (1/|A|) adj A**

C. (1/|A|) A D. adj A − |A|

**26.** The inverse of [2 1; 1 1] is

A. [1 1; 1 2] B. [2 −1; −1 1]

C. [−1 1; 1 −2] **D. [1 −1; −1 2]**

**27.** The inverse of [3 0; 0 2] is

A. [−3 0; 0 −2] B. [3 0; 0 2]

**C. [1/3 0; 0 1/2]** D. [2 0; 0 3]

**28.** If [x 2; 3 y] = [4 2; 3 5], then the values of x and y are

**A. x = 4, y = 5** B. x = 5, y = 4

C. x = 2, y = 3 D. x = 3, y = 2

**29.** In Cramer's rule, the solution of ax + by = p, cx + dy = q gives x equal to

A. |a b; c d| / |p b; q d| B. |p q; b d| / |a c; b d|

**C. |p b; q d| / |a b; c d|** D. |a p; c q| / |a b; c d|

**30.** The solution of x + y = 5 and x − y = 1 is

A. x = 1, y = 4 B. x = 2, y = 3

C. x = 4, y = 1 **D. x = 3, y = 2**

**31.** The solution of 2x + y = 5 and x − y = 1 is

A. x = 1, y = 3 **B. x = 2, y = 1**

C. x = 3, y = −1 D. x = 1, y = 2

**32.** The solution of 2x + 3y = 8 and x − y = −1 is

**A. x = 1, y = 2** B. x = 2, y = 1

C. x = 2, y = 3 D. x = 3, y = 2

**33.** In the matrix inversion method, the system AX = B has the solution

A. $X = BA^{-1}$ B. X = AB

**C. $X = A^{-1}B$** D. X = A + B

**34.** A system of two linear equations has a unique solution by Cramer's rule when the determinant of the coefficient matrix is

A. negative only **B. not zero**

C. zero D. equal to one only

**35.** The matrix [a b; b d] is called a

A. identity matrix
B. singular matrix
C. null matrix
**D. symmetric matrix**

**36.** The inverse of the identity matrix I is

**A. I**
B. −I
C. 0
D. 2I