Choose the correct option:

1. Which of the following is a row matrix?
   (a) matrix P of order 2×2 (b) matrix Q of order 1×2 (c) matrix R of order 2×1 (d) matrix S of order 3×2

2. The order of a matrix is 2×3. It has :
   (a) 5 elements (b) 6 elements (c) 1 element (d) none of these

3. If $A = \begin{bmatrix} 4 & -2 \\ 5 & 7 \end{bmatrix}$, $B = \begin{bmatrix} 3 & 5 \\ -4 & -2 \end{bmatrix}$, $C = \begin{bmatrix} 1 & 3 \\ -2 & 4 \end{bmatrix}$, then the value of $A + B - C$ is :
   (a) $\begin{bmatrix} 6 & 1 \\ 3 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 6 & 0 \\ 3 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} 6 & 3 \\ 0 & 1 \end{bmatrix}$ (d) $\begin{bmatrix} 6 & 6 \\ 3 & 1 \end{bmatrix}$

4. If $3[4 \quad x] + 2[y \quad -3] = [10 \quad 0]$, then :
   (a) $x = 1, y = 0$ (b) $x = -1, y = -2$ (c) $x = 2, y = -1$ (d) $x = -2, y = 1$

5. Order of matrix A is 2×3 and the order of matrix B is 3×1. The order of the matrix AB is:
   (a) 2×1 (b) 1×2 (c) 3×1 (d) 2×3

6. Which of the following is a diagonal matrix?
   (a) $\begin{bmatrix} 0 & 6 & 1 \\ 2 & 0 & 4 \\ 1 & 8 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 2 & 0 & 0 \\ 0 & -1 & 0 \\ 0 & 0 & -2 \end{bmatrix}$ (c) $\begin{bmatrix} 4 & 0 & 0 \\ 0 & -2 & 0 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 1 \\ 0 & 0 & 1 \end{bmatrix}$

7. In a null matrix :
   (a) all the elements are 0 (b) every diagonal element is 0
   (c) every non-diagonal element is 0 (d) every element is 1.

8. $[1 \ 8 \ 9]$ is a :
   (a) row matrix (b) column matrix (c) diagonal matrix (d) null matrix

9. The transpose of matrix $\begin{bmatrix} 2 & -1 & 4 \\ 1 & 7 & 3 \\ -4 & 1 & 5 \end{bmatrix}$ is :
   (a) $\begin{bmatrix} 2 & 1 & 4 \\ -1 & 1 & 5 \\ 4 & 7 & 3 \end{bmatrix}$ (b) $\begin{bmatrix} 2 & 4 & -1 \\ 1 & 3 & 7 \\ -4 & 5 & 1 \end{bmatrix}$ (c) $\begin{bmatrix} -1 & 4 & 2 \\ 7 & 3 & 1 \\ 1 & 5 & -4 \end{bmatrix}$ (d) $\begin{bmatrix} 2 & 1 & -4 \\ -1 & 7 & 1 \\ 4 & 3 & 5 \end{bmatrix}$

10. The order of matrix A is 2×3 and that of B is 3×1.
    (a) AB is possible, but BA is not possible (b) BA is possible but AB is not possible
    (c) AB as well as BA are not possible (d) AB as well as BA are possible

11. If $A = \begin{bmatrix} 2 & -4 \\ 0 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -1 \\ 0 & 5 \end{bmatrix}$, then the value of $B + A$ is :
    (a) $\begin{bmatrix} 3 & -5 \\ 0 & 6 \end{bmatrix}$ (b) $\begin{bmatrix} 6 & 2 \\ -1 & 4 \end{bmatrix}$ (c) $\begin{bmatrix} 1 & -2 \\ -4 & 1 \end{bmatrix}$ (d) $\begin{bmatrix} -3 & 5 \\ 0 & -6 \end{bmatrix}$

12. If $A = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -1 \\ -3 & 2 \end{bmatrix}$, then AB is equal to :
    (a) $\begin{bmatrix} -13 & 5 \\ 1 & 8 \end{bmatrix}$ (b) $\begin{bmatrix} 8 & -1 \\ 5 & 2 \end{bmatrix}$ (c) $\begin{bmatrix} -13 & 8 \\ -8 & 5 \end{bmatrix}$ (d) $\begin{bmatrix} -1 & 0 \\ 7 & -2 \end{bmatrix}$

13. If $A = \begin{bmatrix} 3 & -4 \\ 5 & 6 \end{bmatrix}$, $B = \begin{bmatrix} -1 & 2 \\ 5 & 7 \end{bmatrix}$, then the order of $3A - 2B$ is :

(a) 2×1 (b) 4×4 (c) 1×2 (d) 2×2

14. If $A = \begin{bmatrix} 2 & 5 \\ -3 & 7 \end{bmatrix}$, $B = \begin{bmatrix} 1 & -3 \\ 2 & 5 \end{bmatrix}$, then $B - A$ is equal to :

(a) $\begin{bmatrix} 4 & -1 \\ 6 & -2 \end{bmatrix}$ (b) $\begin{bmatrix} -1 & -8 \\ 5 & -2 \end{bmatrix}$ (c) $\begin{bmatrix} -1 & 8 \\ 5 & 4 \end{bmatrix}$ (d) $\begin{bmatrix} -2 & 4 \\ -1 & -2 \end{bmatrix}$

15. If $M = [1, -2]$, $N = \begin{bmatrix} 2 & 1 \\ -1 & 2 \end{bmatrix}$, then the order of MN is :

(a) 1×2 (b) 2×1 (c) 1×1 (d) 2×2

16. If $A = \begin{bmatrix} -2 & 3 \\ 4 & 5 \end{bmatrix}$, $B = \begin{bmatrix} 5 & 2 \\ -7 & 3 \end{bmatrix}$, then transpose of matrix $(A + B)$ is :

(a) $\begin{bmatrix} 3 & 5 \\ -3 & 8 \end{bmatrix}$ (b) $\begin{bmatrix} 3 & -3 \\ 5 & 8 \end{bmatrix}$ (c) $\begin{bmatrix} 3 & 8 \\ -3 & 5 \end{bmatrix}$ (d) $\begin{bmatrix} 3 & 5 \\ -8 & 3 \end{bmatrix}$

17. If $A = \begin{bmatrix} 2 & 1 \\ -1 & 4 \end{bmatrix}$, $B = \begin{bmatrix} 5 & -1 \\ 2 & -1 \end{bmatrix}$, then $A^T - B^T$ is equal to :

(a) $\begin{bmatrix} 1 & -1 \\ 4 & 2 \end{bmatrix}$ (b) $\begin{bmatrix} 7 & -1 \\ 2 & 5 \end{bmatrix}$ (c) $\begin{bmatrix} -3 & -1 \\ 2 & 4 \end{bmatrix}$ (d) $\begin{bmatrix} -3 & -3 \\ 2 & 5 \end{bmatrix}$

18. If $A = \begin{bmatrix} 1 & 2 \\ 3 & 3 \end{bmatrix}$, $B = \begin{bmatrix} x & 0 \\ 0 & y \end{bmatrix}$ and $AB = \begin{bmatrix} x & 0 \\ 9 & 0 \end{bmatrix}$, then the order of the matrix BA is :

(a) 1×2 (b) 2×1 (c) 2×3 (d) 2×2

19. If $A = \begin{bmatrix} 2 & 0 \\ -3 & 1 \end{bmatrix}$, $B = \begin{bmatrix} 0 & 1 \\ -2 & 3 \end{bmatrix}$, then the matrix BA is :

(a) $\begin{bmatrix} -3 & 1 \\ -13 & 3 \end{bmatrix}$ (b) $\begin{bmatrix} -4 & 5 \\ -2 & 7 \end{bmatrix}$ (c) $\begin{bmatrix} -3 & 2 \\ 5 & -7 \end{bmatrix}$ (d) $\begin{bmatrix} 4 & -1 \\ 2 & 19 \end{bmatrix}$

20. If $A = \begin{bmatrix} x & 3 \\ y & 3 \end{bmatrix}$ and $A^2 = 3I$, where $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ the order of A^2 is :

(a) 2×2 (b) 2×3 (c) 1×2 (d) 3×2

B. Short Answer Type Questions