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| **CLASS 12** |  **APPLIED MATHEMATICS 241** |  |
| **QUESTION BANK** | **CHAPTER::MATRICES AND DETERMINANTS** |  |

 1 MARK QUESTIONS

1. If A=[32x+3x−1x+2] is a symmetric matrix, then x =………

2. If A = $\left[\begin{matrix}1&3\\3&4\end{matrix}\right]$ and A2 – KA – 5I = 0, then K =……….

3. The matrix $\left[\begin{matrix}1&0&0\\0&2&0\\0&0&4\end{matrix}\right] $is a

(a) identity matrix

(b) symmetric matrix

(c) skew symmetric matrix

(d) none of these

4.  For any two matrices A and B, we have

(a) AB = BA

(b) AB ≠ BA

(c) AB = O

(d) None of the above

5. If A is a skew-symmetric matrix, then A2 is a

(a) Skew symmetric matrix

(b) Symmetric matrix

(c) Null matrix

(d) Cannot be determined

6. If a matrix has 6 elements, then number of possible orders of the matrix can be
(a) 2
(b) 4
(c) 3
(d) 6

7. The diagonal elements of a skew symmetric matrix are
(a) all zeroes
(b) are all equal to some scalar k(≠ 0)
(c) can be any number
(d) none of these

8.  If A = $\left[\begin{matrix}5&x\\y&0\end{matrix}\right]$ and A = A’ then
(a) x = 0, y = 5
(b) x = y
(c) x + y = 5
(d) x – y = 5

9. If a matrix A is both symmetric and skew symmetric then matrix A is
(a) a scalar matrix
(b) a diagonal matrix
(c) a zero matrix of order n × n
(d) a rectangular matrix.

10. Find the values of x, y, and z if $\left[\begin{matrix}x+y+z\\x+z\\y+z\end{matrix}\right]$=$\left[\begin{matrix}9\\5\\7\end{matrix}\right]$

 2 MARKS QUESTIONS

11. **If**$\left[\begin{matrix}2&3\\4&5\end{matrix}\right]$ **Prove that A – At is a skew – symmetric matrix.**

**12. Solve for x given that **

**13. Find the value of x if** $\left|\begin{matrix}2&4\\5&1\end{matrix}\right|=\left|\begin{matrix}2x&4\\6&x\end{matrix}\right|$

**14.** Find the co-factor of the element a23 of the determinant: $\left|\begin{matrix}5&3&8\\2&0&1\\1&2&3\end{matrix}\right|$

15. If A and B are invertible matrices of order 3, |A| = 2 and |(AB)-1| = −16 Find |B|.
16. Find the adjoint of the matrix A = $\left[\begin{matrix}2&-1\\4&3\end{matrix}\right]$

17. For what value of ‘x’, the matrix $\left[\begin{matrix}5-x&x+1\\2&4\end{matrix}\right]$ is singular?

 3 MARKS QUESTIONS

18. Find the minors and co-factors of all elements of the determinant $\left|\begin{matrix}1&-2\\4&3\end{matrix}\right|$

19. Solve the system of linear equations using Cramer’s rule ::

 $6x+y-3z-5=0;x+3y-2z-5=0;2x+y+4z-8=0$

20. If A = $\left[\begin{matrix}2&3&4\\1&-1&0\\0&1&2\end{matrix}\right]$, find A-1 .

21. ST $\left[\begin{matrix}5&-1\\6&7\end{matrix}\right]\left[\begin{matrix}2&1\\3&4\end{matrix}\right]\ne \left[\begin{matrix}2&1\\3&4\end{matrix}\right]\left[\begin{matrix}5&-1\\6&x\end{matrix}\right]$

22. Find the area of the triangle whose vertices are (3, 8) (-4, 2) and (5, 1).

23. $A=\left|\begin{matrix}2&-3&5\\6&0&4\\1&5&-7\end{matrix}\right|$**Verify that det A = det**$\left(A^{'}\right)$

 4 MARKS QUESTIONS

24. **If**$A=\left[\begin{matrix}2&3\\1&-4\end{matrix}\right] and B= \left[\begin{matrix}1&-2\\-1&3\end{matrix}\right]$
 **then verify that (AB)-1 = B-1 A-1**

25. **If**$A=\left[\begin{matrix}2&-3&5\\3&2&-4\\1&1&-2\end{matrix}\right]$
**find A-1, using A-1 solve the system of equations**
**2x – 3y + 5z = 11**
**3x + 2y – 4z = -5**
**x + y -2z = -3**

**26.** $\left|\begin{matrix}2&-3&5\\6&0&4\\1&5&-7\end{matrix}\right|$**Verify that**
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**27. If** $A=\left[\begin{matrix}3&-4\\-1&2\end{matrix}\right]$**, find matrix B such that AB = I.**