# CHAPTER-3

# MATRICES

## 01 MARK TYPE QUESTIONS

| Q. NO | QUESTION | MARK |
|---|---|---|
| 1. | In a certain city there are 30 colleges. Each college has 15 peons, 6 clerks, 1 typist and 1 section officer. Express the given information as a column matrix.<br>A) $\begin{bmatrix}15\\1\\1\\6\end{bmatrix}$ B) $\begin{bmatrix}15\\6\\1\\1\end{bmatrix}$ C) $\begin{bmatrix}6\\15\\1\\1\end{bmatrix}$ D) $\begin{bmatrix}1\\1\\6\\15\end{bmatrix}$ | 1 |
| 2. | $If\ A = \{a_{ij}\}$ is a square matrix of order 2 such that $a_{ij} = \begin{cases}1, when\ i \neq j\\0, when\ i = j\end{cases}$,<br>$A)$ $\begin{pmatrix}1 & 0\\1 & 0\end{pmatrix}$ B) $\begin{pmatrix}1 & 1\\0 & 0\end{pmatrix}$ C) $\begin{pmatrix}0 & 1\\1 & 0\end{pmatrix}$ D) $\begin{pmatrix}1 & 0\\0 & 1\end{pmatrix}$ | 1 |
| 3. | Let A be a skew symmetric matrix of order 3. If \|A\|=x, then $(2023)^x$ is<br>A) 2023 B) 1/2023 C) $2023^2$ D) 1 | 1 |
| 4. | If a matrix A = [1 2 3], then the matrix $AA^T$ is :<br>A) 14 B) $\begin{bmatrix}1 & 0 & 0\\0 & 2 & 0\\0 & 0 & 3\end{bmatrix}$ C) $\begin{bmatrix}1 & 2 & 3\\2 & 3 & 1\\3 & 1 & 2\end{bmatrix}$ D)[14] | 1 |
| 5. | A and B are two matrices of order 3x2 and 3x2 then the order of the matrix $AB^t$.<br>A) 3x3 B) 2x2 C) 2x3 D) Not define | 1 |
| 6. | If for a square matrix A, $A^2 - 3A + I = O\ and\ A^{-1} = xA + yI$, then the value of x+y is :<br>A) -2 B) 2 C) 3 D) -3 | 1 |
| 7. | If $A = \begin{bmatrix}0 & 1\\0 & 0\end{bmatrix}, then\ A^{2023}$ is equal to<br>A) $\begin{bmatrix}0 & 1\\0 & 0\end{bmatrix}$ B) $\begin{bmatrix}0 & 2023\\0 & 0\end{bmatrix}$ C) $\begin{bmatrix}0 & 0\\0 & 0\end{bmatrix}$ D) $\begin{bmatrix}2023 & 0\\0 & 2023\end{bmatrix}$ | 1 |
| 8. | Number of symmetric matrices of order 3x3 with each entry 1or-1 is<br>A) 256 B) 64 C) 512 D) 4 | 1 |
| 9. | If $\begin{bmatrix}1 & 2 & 1\\2 & 3 & 1\\3 & a & 1\end{bmatrix}$ is a non singular matrix $a \in A$, then the set A is<br>A) R B) {0} C) {4} D) R-{4} | 1 |
| 10. | If $\begin{bmatrix}2 & 0\\5 & 4\end{bmatrix} = P + Q$, where P is a symmetric and Q is a skew symmetric matrix, then Q is equal to<br>A) $\begin{bmatrix}2 & 5/2\\5/2 & 4\end{bmatrix}$ B) $\begin{bmatrix}0 & -5/2\\5/2 & 0\end{bmatrix}$ C) $\begin{bmatrix}0 & 5/2\\-5/2 & 0\end{bmatrix}$<br>D) $\begin{bmatrix}2 & -5/2\\5/2 & 4\end{bmatrix}$ | 1 |
| 11. | If O(A)=2×3, O(B)=3×2, O(C)= 3×3 then which of the following is not defined?<br>i)CB+A’ ii)C(A+B’)’ iii)BAC iv)C(A+B’) | 1 |

| | | |
|---|---|---|
| 12. | If A= $\begin{bmatrix}1 & 2 & 3\\1 & 4 & 9\\1 & 8 & 27\end{bmatrix}$ what is the value of \|adjA\|?<br><br>i)36 ii)72 iii)144 iv) none | 1 |
| 13. | The matrix A has x rows and (x+5) columns and matrix B has y rows and (11-y) column. Both AB and BA exist then the value of x and y are-<br><br>i) 8,3 ii)3,4 iii)3,8 iv)8,8 | 1 |
| 14. | If the matrix $\begin{bmatrix}1 & 3 & a+2\\2 & 4 & 8\\3 & 5 & 10\end{bmatrix}$ is singular then what is the value of a?<br><br>i)-2 ii) 4 iii) 2 iv) -4 | 1 |
| 15. | If I is a unit matrix of order 10 then the determinant of I is equal to ______.<br><br>i)10 ii)1 iii)1/10 iv)9 | 1 |
| 16. | What is the total number of possible matrices of order 3x3 with each entry 2 and 0 ?<br><br>i)9 ii)27 iii)81 iv)512 | 1 |
| 17. | If A= $\begin{bmatrix}0 & 2\\3 & -4\end{bmatrix}$ and kA = $\begin{bmatrix}0 & 3a\\2b & 24\end{bmatrix}$ , then the value of k ,a, b are respectively<br><br>i)-6, -12, -18 ii)-6,4,9<br>iii)-6, -4, -9 iv)-6,12,18 | 1 |
| 18. | If A= $\begin{bmatrix}4 & x+2\\2x-3 & x+2\end{bmatrix}$ is a symmetric matrix , then x=<br><br>i)3 ii)2 iii)4 iv)5 | 1 |
| 19. | if A is a square matrix of order 4 and I is unit matrix then which of the following is true?<br><br>i)det(2A) = 2detA ii) det(-A) = -det A<br>iii)det(A+I) = det A+I iv)det(2A)= 16det(A) | 1 |
| 20. | If A is a non-singular matrix satisfying $A^2$-A+2I=0, then $A^{-1}$=<br><br>i)I-A ii) $\frac{1}{2}(I-A)$ iii)I+A<br>iv)$\frac{1}{2}$(I+A) | 1 |
| 21. | If the order of matrix A is m × p. And the order of B is p × n. Then the order of matrix AB is?<br>(a) n × p<br>(b) m × n<br>(c) n × p<br>(d) n × m | 1 |
| 22. | If a matrix has 6 elements, then number of possible orders of the matrix can be<br>(a) 2<br>(b) 4<br>(c) 3<br>(d) 6 | 1 |

| | | |
|---|---|---|
| 23. | If A = diag (3, -1), then matrix A is<br>(a) $\begin{bmatrix} 0 & 3 \\ 2 & -1 \end{bmatrix}$ (b) $\begin{bmatrix} 2 & -1 \\ 3 & 0 \end{bmatrix}$<br>(c) $\begin{bmatrix} 3 & 0 \\ 0 & -1 \end{bmatrix}$ (d) $\begin{bmatrix} 3 & -1 \\ 0 & -2 \end{bmatrix}$ | 1 |
| 24. | If A = $[a_{ij}]$ is a 2 × 3 matrix, such that $a_{ij} = \frac{(-i+2j)^2}{5}$<br>then $a_{23}$ is<br>(a) $\frac{1}{5}$ (b) $\frac{2}{5}$ (c) $\frac{9}{5}$ (d) $\frac{16}{5}$ | 1 |
| 25. | If A = diag. [ 5, -2, 7] ; B = diag. [7, 8, 5], then $3A - 2B =$<br>(a) diag. [ 1, -22, -11] (c) diag. [-1, 22, -11]<br>(b) diag. [-1, -22, 11] (d) diag. [1, -22, 11] | 1 |
| 26. | If A is a symmetric matrix of integers with zeroes on the main diagonal, the sum of the entries of A must be an _____.<br>a. integer b. odd integer<br>c. even integer d. irrational number | 1 |
| 27. | If X is any m × n matrix such that XY and YX both defined, then Y is an _____.<br>a. m × n matrix b. n × m matrix<br>c. n × n matrix d. m × m matrix | 1 |
| 28. | If A is a square matrix of order p and if there exists another square matrix B of the same order p, such that AB = BA = I, then _________.<br>a. $A^{-1}$ does not exist<br>b. AB is defined<br>c. B is called the inverse matrix of A<br>d. A is not the inverse of B | 1 |
| 29. | The total number of elements in a matrix represents a prime number. The possible orders the matrix can have ______.<br>a. 2 b. 9 c. 1 d. 4 | 1 |
| 30. | **Assertion (A)**: If A = $\begin{bmatrix} 0 & 2 & -1 \\ -2 & 0 & 3 \\ 1 & -3 & 0 \end{bmatrix}$ then, $A^{-1}$ is a skew symmetric matrix.<br>**Reason(R):** If A is skew symmetric matrix then $A^{-1}$ is skew symmetric matrix.<br>(a) Both A and R are true and R is the correct explanation of A<br>(b) both A and R are true but R is not correct explanation of A<br>(c) A is true but R is false<br>(d) A is false but R is true | 1 |
| 31. | Let A, B, C are three matrices of same order. | 1 |

| | | |
|---|---|---|
| | Now, consider the following statements:<br><br>Assertion (A): If A = B, then AC = BC<br>Reason (R): If AC = BC, then A = B<br><br>(a) Both A and R are true and R is the correct explanation of A.<br>(b) Both A and R are true but R is not the correct explanation of A.<br>(c) A is true but R is false.<br>(d) A is false but R is true. | |
| 32. | A is square matrix of order 3 and \|A\| = 7. Write the value of \|adj. A\|. | 1 |
| 33. | A matrix has 5 elements, write all possible order it can have. | 1 |
| 34. | Total number of possible matrices of order 2 × 3 with each entry 1 or 0 is.<br>(a) 6 b) 36 c) 32 d) 64 | 1 |
| 35. | Assume Y, W and P, are the matrices of order 3×k, n×3 and p×k. Find the restrictions on n, k and p, so that PY+WY will be defined. | 1 |
| 36. | If A is a square matrix such that $A^2$=A, then (I + A)^2 – 3A is<br>(a) I (b) 2A (c) 3I (d) A | 1 |
| 37. | If A and B are two matrices such that AB = B and BA = A, then $B^2$ is equal to<br>a) B<br>b) A<br>c) 1<br>d) 0 | 1 |
| 38. | Construct a 3x1 matrix A =[aij] whose elements aij are given by aij=$\frac{1}{2}$ \|-3i-j\| | 1 |
| 39. | If A, B are symmetric matrices of same order, then AB – BA is a<br>(A) Skew symmetric matrix (B) Symmetric matrix (C) Zero matrix (D) Identity matrix | 1 |
| 40. | If A= $\begin{bmatrix} cosa & -sinb \\ sinb & cosa \end{bmatrix}$, then A+A'= I, if the value of a is:<br>a) $\frac{\Pi}{6}$ b) $\frac{\Pi}{3}$ c) Π d) $\frac{3\Pi}{2}$ | 1 |
| 41. | The matrix $\begin{bmatrix} 2 & -1 & 4 \\ 1 & 0 & -5 \\ -4 & 5 & 7 \end{bmatrix}$ is<br>A) A symmetric matrix<br>B) A skew symmetric matrix<br>C) A diagonal matrix<br>None of these | 1 |
| 42. | A matrix has 18 elements, then possible number of orders of a matrix are<br>A) 3 | 1 |

| | | |
|---|---|---|
| | B) 4<br>C) 6<br>D) 5 | |
| 43. | If matrix A is of order m ×n, and for matrix B, AB and BA both are defined, then order of matrix B is<br>A) m ×n<br>B) n ×n<br>C) m ×n<br>D) n ×m | 1 |
| 44. | The diagonal elements of a skew symmetric matrix are<br>A) all zeros<br>B) are all equal to some scalar k($\neq 0$)<br>C) can be any number<br>D) none of these | 1 |
| 45. | If $\begin{pmatrix} y+2x & 5 \\ -x & 3 \end{pmatrix}$=$\begin{pmatrix} 7 & 5 \\ -2 & 3 \end{pmatrix}$, then the value of y is<br>A ) 11<br>B) 3<br>C) -3<br>D) 1 | 1 |
| 46. | Total no of possible matrices of order $3 \times 3$ with each entry 1 or 0 is<br>A) 512<br>B) 64<br>C) 32<br>D) 36 | 1 |
| 47. | If matrix A= $[1 \quad 2 \quad 3]$ then A$A^t equal\ to$ , where $A^t$ Is the transpose of matrix A.<br>A) $[14]$<br>B) $[12]$<br>C) 0<br>$[10]$ | 1 |
| 48. | If A= $\begin{bmatrix} 0 & a \\ 0 & 0 \end{bmatrix}$ then $A^{16}$ is equal to<br>A) A<br>B) $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$<br>C) $\begin{pmatrix} 1 & 0 \\ 1 & 0 \end{pmatrix}$<br>$[12]$ | 1 |
| 49. | If A and B are symmetric matrices, then AB-BA is a<br>A) Symmetric matrix<br>B) Skew symmetric matrix | 1 |

| | | |
|---|---|---|
| | C) Diagonal matrix<br>Unit matrix | |
| 50. | If A is a square matrix such that $A^2$=A, then $(I + A)^2 - 3A\ is$<br>A) I<br>B) 2I<br>C) 3I<br>D) A | 1 |
| 51. | If A and B are symmetric matrices, then ABA is<br>a) symmetric matrix<br>b) diagonal matrix<br>c) skew - symmetric matrix<br>d) scalar matrix | 1 |
| 52. | If A = $\begin{bmatrix} 2 & 0 & -3 \\ 4 & 3 & 1 \\ -5 & 7 & 2 \end{bmatrix}$ is expressed as the sum of a symmetric and skew - symmetric matrix, then the symmetric matrix is<br>a) $\begin{bmatrix} 2 & 2 & -4 \\ 2 & 3 & 4 \\ -4 & 4 & 2 \end{bmatrix}$<br>b) $\begin{bmatrix} 2 & 4 & -5 \\ 0 & 3 & 7 \\ -3 & 1 & 2 \end{bmatrix}$<br>c) $\begin{bmatrix} 4 & 4 & -8 \\ 4 & 6 & 8 \\ -8 & 8 & 4 \end{bmatrix}$<br>d) $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ | 1 |
| 53. | If$A = \begin{bmatrix} 0 & 2 & -3 \\ -2 & 0 & -1 \\ 3 & 1 & 0 \end{bmatrix}$ then A is a<br>a) skew - symmetric matrix<br>b) symmetric matrix<br>c) none of these<br>d) diagonal matrix | 1 |
| 54. | The number of all possible matrices of order$3 \times 3$ with each entry 0 or1 is<br>a) 81<br>b) none of these<br>c) 512<br>d) 18 | 1 |
| 55. | If A = $\begin{bmatrix} 1 & 2 & x \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ and B = $\begin{bmatrix} 1 & -2 & y \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$ and AB = $I_3$ , then x + y equals<br>a) - 1<br>b) 0<br>c) none of these<br>d) 2 | 1 |
| 56. | A = $[a_{ij}]_{m \times\times n}$ is a square matrix, if<br><br>a) $m < n$ | 1 |

| | | |
|---|---|---|
| | b) m > n<br>c) m = n<br>d) None of these | |
| 57. | If A = $\begin{bmatrix} 1 & -1 \\ 2 & -1 \end{bmatrix}$, B = $\begin{bmatrix} a & 1 \\ b & -1 \end{bmatrix}$ and $(A + B)^2 = A^2 + B^2$, then values of a and b are<br>a) a = 0, b = 4<br>b) a = 1, b = 4<br>c) a = 2, b = 4<br>d) a = 4, b = 1 | 1 |
| 58. | If A = $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$, then $A^2$ is equal to<br>a) $\begin{bmatrix} 0 & 1 \\ 0 & 1 \end{bmatrix}$<br>b) $\begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix}$<br>c) $\begin{bmatrix} 1 & 0 \\ 1 & 0 \end{bmatrix}$<br>d) $\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ | 1 |
| 59. | If A and B are matrices of same order, then (AB' – BA') is a<br>a) null matrix<br>b) unit matrix<br>c) symmetric matrix<br>d) skew - symmetric matrix | 1 |
| 60. | If A and B are two matrices of the order $3\times m$ and $3\times n$, respectively, and m = n, then the order of matrix (5A – 2B) is<br>a) $3\times 3$<br>b) $m\times n$<br>c) $3\times n$<br>d) $m\times 3$ | 1 |
| 61. | If a matrix has 8 elements then the total number of different orders of writing the matrices is<br>a) 1<br>b) 2<br>c) 3<br>d) 4 | 1 |
| 62. | If A = $\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ and $n \epsilon N$, then $A^n$ is equal to<br>a. n A<br>b. 2n A<br>c. $2^{n-1}$ A<br>d. $2^n$ A | 1 |
| 63. | $A = [a_{ij}]_{mxn}$ is a square matrix, if<br>a. m < n<br>b. m > n<br>c. m = n<br>d. none of these | 1 |
| 64. | The number of all possible matrices of order 3x3 with each entry 0 or 1 is:<br>a. 27 | 1 |

| | | |
|---|---|---|
| | b. 18<br>c. 81<br>d. 512 | |
| 65. | If A = $\begin{bmatrix}1 & 0\\2 & 1\end{bmatrix}$ , B = $\begin{bmatrix}x & 0\\1 & 1\end{bmatrix}$ and A = $B^2$ , then x equals<br>a. -1<br>b. 1<br>c. 2<br>d. -2 | 1 |
| 66. | If A is a square matrix and $A^2$ = A, then<br>$(I + A)^2 – 3A$ is equal to:<br>a. I<br>b. A<br>c. 2A<br>d. 3I | 1 |
| 67. | The numbers of all possible matrices of order 2x2 with each entry 1, 2 or 3 is<br>a. 12<br>b. 64<br>c. 81<br>d. 7 | 1 |
| 68. | If A and B are square matrices of same order , then $AB' - BA'$ is a<br>a. skew – symmetric matrix<br>b. symmetric matrix<br>c. null matrix<br>d. unit matrix | 1 |
| 69. | If A is a square matrix such that $A^2$ = A, then find $(2 + A)^3 – 19$ A.<br>a. 8I<br>b. 2I<br>c. I<br>d. A | 1 |
| 70. | If the matrix A is both symmetric and skew symmetric matrix, then<br>a. A is a diagonal matrix<br>b. A is a zero matrix<br>c. A is a square matrix<br>d. none of these | 1 |
| 71. | Radha has 3 notebooks and 2 pens, Krishna has 2 notebooks and 1 pen and Ram has 4 notebooks and 2 pens. A matrix is formed with the number of notebooks and pen that the three persons have in three rows and three columns. The number of elements in the matrix is<br>(a) 14 (b) 6 (c) 2 (d) 8 | 1 |
| 72. | If 5 students have pens only, then a matrix with only one column is created which lead to the idea of a type of matrix. This matrix is known as<br>(a) Row matrix (b) column matrix (c) square matrix (d) diagonal matrix | 1 |
| 73. | Given that matrices A and B are of order 3 x n and m x 5 respectively, then the order of the matrix C = 5A + 3B is<br>(a) 3 x 5 (b) 5 x 3 (c) 3 x 3 (d) 5 x 5 | 1 |
| 74. | Sudha created a square matrix A such that $A^2$ = A, the<br>$(I + A)^3 – 7A$ is equal to<br>(a) A (b) I + A (c) I – A (d) I | 1 |

75. Given that A = $\begin{bmatrix} a & b \\ c & -c \end{bmatrix}$ and $A^2 = 3I$, then (1)

(a) $1 + a^2 + bc = 0$ (b) $1 - a^2 - bc = 0$ (c) $3 - a^2 - bc = 0$
(d) $3 + a^2 + bc = 0$

76. Neha has a factory which produces shoes for boys and girls in three different price categories labelled 1, 2 and 3. The quantity produced by the factory is represented by the matrix given below (1)

Boys Girls

$\begin{matrix} 1 \\ 2 \\ 3 \end{matrix}\begin{bmatrix} 80 & 40 \\ 65 & 70 \\ 50 & 75 \end{bmatrix}$. Now if the production in the factory is doubled in all categories then the revised quantities produced by the factory is given by the matrix

(a) $\begin{bmatrix} 160 & 80 \\ 65 & 70 \\ 50 & 75 \end{bmatrix}$ (b) $\begin{bmatrix} 80 & 40 \\ 130 & 140 \\ 50 & 75 \end{bmatrix}$

(c) $\begin{bmatrix} 80 & 40 \\ 65 & 70 \\ 50 & 75 \end{bmatrix}$ (d) $\begin{bmatrix} 160 & 80 \\ 130 & 140 \\ 100 & 150 \end{bmatrix}$

77. For a matrix A = $\begin{bmatrix} 2 & 5 \\ -11 & 7 \end{bmatrix}$, the value of AI is (1)

(a) $\begin{bmatrix} -2 & -5 \\ 11 & -7 \end{bmatrix}$ (b) $\begin{bmatrix} 2 & 5 \\ -11 & 7 \end{bmatrix}$ (c) $\begin{bmatrix} 7 & 11 \\ -5 & 2 \end{bmatrix}$ (d) $\begin{bmatrix} 7 & -5 \\ 11 & 2 \end{bmatrix}$

78. There are 3 families A, B and C. The number of men, women and children in these families are as under: (1)

| | Men | Women | Children |
|---|---|---|---|
| Family A | 2 | 3 | 1 |
| Family B | 2 | 1 | 3 |
| Family C | 4 | 2 | 6 |

When the above table is represented by a matrix , the order of the matrix is

(a) 3 x 1 (b) 1 x 3 (c) 3 x 2 (d) 3 x 3

79. If A = $\begin{bmatrix} 0 & 2 \\ 3 & -4 \end{bmatrix}$ and kA = $\begin{bmatrix} 0 & 3a \\ 2b & 24 \end{bmatrix}$ then the value of k, a and b respectively are (1)

(a) -6, -12, -18 (b) -6, -4, - 9 (c) -6, 4, 9 (d) -6, 12. 18

80. The number of all possible matrices of order 3 x 2 with entry 0 or 1 is (1)

(a) 18 (b) 27 (c) 64 (d) 512

**ANSWERS:**

| Q. NO | ANSWER | MARKS |
|---|---|---|
| 1. | B | 1 |
| 2. | C | 1 |
| 3. | D | 1 |
| 4. | D | 1 |
| 5. | A | 1 |
| 6. | B | 1 |
| 7. | C | 1 |
| 8. | C | 1 |
| 9. | D | 1 |
| 10. | B | 1 |
| 11. | (iv)C(A+B')<br>Ans- O(B') =2X3<br>O(A+B')=2X3<br>C(A+B') is not defined as number of column of C $\neq$ number of rows in A+B' | 1 |
| 12. | (iii)144<br>Ans- det(A)=12<br>Det(adjA) =det(A)$^{3-1}$ =12$^{2}$ =144<br>properties:- det(adjA)=det(A)$^{n-1}$ | 1 |
| 13. | iii)3,8<br>ans:- AB exist if x+5=y<br>BA exist if 11-y=x<br>Solving these two equation : x=3 and y=8 | 1 |
| 14. | ii)4<br>ans:-if the determinant of a matrix is zero then the matrix is called singular.<br>Thus, det(A)=0<br>i.e 2a-8=0<br>i.e a=4 | 1 |
| 15. | ii)1<br>ans:- determinant of a unit matrix of any order is 1. | 1 |
| 16. | iv)512<br>ans:-in a 3x3 order matrix total number of entry is 9. Each entry is done by either 2 or 0 i.e by 2ways.so, by fundamental principle of counting the total number of ways in which 9elements can be chosen to form matrices is 2$^{9}$=512 . | 1 |
| 17. | iii)-6, -4, -9<br>ans:- kA=$k\begin{bmatrix}0 & 2\\3 & -4\end{bmatrix}=\begin{bmatrix}k & 2k\\3k & -4k\end{bmatrix}=\begin{bmatrix}0 & 3a\\2b & 24\end{bmatrix}$<br>by equality of matrices<br>-4k=24 i.e k=-6<br>3a=2k i.e a=-4<br>2b=3k i.e b=-9 | 1 |
| 18. | iv)5<br>ans:- for a symmetric matrix A=A$^{T}$<br>x+2= 2x-3<br>x=5 | 1 |
| 19. | iv)det(2A) = 16(detA)<br>ans:- $\lvert kA\rvert = k^{n}\lvert A\rvert$ where A is matrix of order n | 1 |

| | | |
|---|---|---|
| | | 1 |
| 20. | ii) $\frac{1}{2}(I - A)$<br>ans:-A is non-singular matrix so $A^{-1}$ exist<br>multiply $A^{-1}$ in both side of matrix equation and use $A^{-1}A=I$ and $A^{-1}I=A^{-1}$ | 1 |
| 21. | b | 1 |
| 22. | b | 1 |
| 23. | c | 1 |
| 24. | d | 1 |
| 25. | d | 1 |
| 26. | c | 1 |
| 27. | b | 1 |
| 28. | c | 1 |
| 29. | a | 1 |
| 30. | a | 1 |
| 31. | C | 1 |
| 32. | 49 | 1 |
| 33. | 5×1 or 1×5 | 1 |
| 34. | D | 1 |
| 35. | K=3 and p=n | 1 |
| 36. | A | 1 |
| 37. | A | 1 |
| 38. | A= $\begin{bmatrix} 2 \\ 7/2 \\ 5 \end{bmatrix}$ | 1 |
| 39. | A | 1 |
| 40. | B | 1 |
| 41. | D | 1 |
| 42. | C | 1 |
| 43. | D | 1 |
| 44. | A | 1 |
| 45. | B | 1 |
| 46. | A | 1 |
| 47. | A | 1 |
| 48. | B | 1 |
| 49. | B | 1 |
| 50. | A | 1 |
| 51. | (a) | 1 |
| 52. | (a) | 1 |
| 53. | (a) | 1 |
| 54. | (c) | 1 |
| 55. | (b) | 1 |
| 56. | (a) | 1 |
| 57. | (b) | 1 |

| | | |
|---|---|---|
| 58. | (d) | 1 |
| 59. | (d) | 1 |
| 60. | (c) | 1 |
| 61. | d | 1 |
| 62. | d | 1 |
| 63. | c | 1 |
| 64. | d | 1 |
| 65. | b | 1 |
| 66. | c | 1 |
| 67. | c | 1 |
| 68. | a | 1 |
| 69. | a | 1 |
| 70. | b | 1 |
| 71. | b | 1 |
| 72. | b | 1 |
| 73. | a | 1 |
| 74. | d | 1 |
| 75. | c | 1 |
| 76. | d | 1 |
| 77. | b | 1 |
| 78. | d | 1 |
| 79. | b | 1 |
| 80. | C | 1 |