RAVI MATHS TUITION CENTER, CHENNAI-82. WHATSAPP.- 8056206308

12TH CBSE MATHS FREE TERM 1 CHAPTER 1 TEST MATRICES 1

12th Standard CBSE

Maths

TERM 1 MODEL PAPERS + STUDY MATERIALS

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Exam Time : 01:30:00 Hrs

Total Marks : 75

1) If a matrix has 6 elements, then number of possible orders of the matrix can be 1

(a) 2 (b) 4 (c) 3 (d) 6

2) If A = $[a_{ij}]$ is a 2 × 3 matrix, such that $a_{ij} = \frac{(-i+2j)^2}{5}$ .then a_{23} is 1

(a) $\frac{1}{5}$ (b) $\frac{2}{5}$ (c) $\frac{9}{5}$ (d) $\frac{16}{5}$

3) If A = diag(3, -1), then matrix A is 1

(a) $\begin{bmatrix}0 & 3\\0 & -1\end{bmatrix}$ (b) $\begin{bmatrix}-1 & 0\\3 & 0\end{bmatrix}$ (c) $\begin{bmatrix}3 & 0\\0 & -1\end{bmatrix}$ (d) $\begin{bmatrix}3 & -1\\0 & 0\end{bmatrix}$

4) Total number of possible matrices of order 2 × 3 with each entry 1 or 0 is 1

(a) 6 (b) 36 (c) 32 (d) 64

5) If A is a square matrix such that $A^2=A$, then $(I + A)^2 - 3A$ is 1

(a) I (b) 2A (c) 3I (d) A

6) If matrices A and B are inverse of each other then 1

(a) AB = BA (b) AB = BA = I (c) AB = BA = 0 (d) AB = 0, BA = I

7) If A = $\begin{bmatrix}0 & 2\\2 & 0\end{bmatrix}$ 1

(a) $\begin{bmatrix}0 & 2\\2 & 0\end{bmatrix}$ (b) $\begin{bmatrix}0 & 4\\4 & 0\end{bmatrix}$ (c) $\begin{bmatrix}4 & 0\\4 & 0\end{bmatrix}$ (d) $\begin{bmatrix}4 & 0\\0 & 4\end{bmatrix}$

8) The diagonal elements of a skew symmetric matrix are 1

(a) all zeroes (b) are all equal to some scalar k(≠ 0)

(c) can be any number (d) none of these

9) If A = $\begin{bmatrix}5 & x\\y & 0\end{bmatrix}$ and A = A' then 1

(a) x = 0, y = 5 (b) x = y (c) x + y = 5 (d) x – y = 5

10) If a matrix A is both symmetric and skew symmetric then matrix A is 1

(a) a scalar matrix (b) a diagonal matrix (c) a zero matrix of order n × n

(d) a rectangular matrix.

11) A = $[a_{ij}]_{m \times n}$\ is a square matrix, if 1

(a) m < n (b) m > n (c) m = n (d) None of these

12) The number of all possible matrices of order 3 × 3 with each entry 1

(a) 27 (b) 18 (c) 81 (d) 512

13) The restriction on n, k and p so that PY + WY will be defined are: 1

(a) k = 3, p = n (b) k is arbitrary, p = 2 (c) p is arbitrary, k = 3

(d) k = 2, p = 3

14) If n = p, then the order of the matrix 7X – 5Z is: 1

(a) p × 2 (b) 2 × n (c) n × 3 (d) p × n

15) If A, B are symmetric matrices of same order, then AB – BA is a 1

(a) Skew symmetric matrix (b) Symmetric matrix (c) Zero matrix

(d) Identity matrix

16) If A = $\begin{bmatrix} cos\alpha & -sin\alpha \\ sin\alpha & cos\alpha \end{bmatrix}$, and A + A' = I, then the value of a is 1

(a) $\frac{\pi}{6}$ (b) $\frac{\pi}{6}$ (c) π (d) $\frac{3\pi}{2}$

17) Matrices A and B will be inverse of each other only if 1

(a) AB = BA (b) AB = BA = 0 (c) AB = 0, BA = I (d) AB = BA = I

18) If A = $\begin{bmatrix} \alpha & \beta \\ \gamma & -\alpha \end{bmatrix}$ is such that A^2 = I, then 1

(a) $1 + \alpha^2 + \beta\gamma = 0$ (b) $1 - \alpha^2 + \beta\gamma = 0$ (c) $1 - \alpha^2 - \beta\gamma = 0$

(d) $1 + \alpha^2 - \beta\gamma = 0$

19) If the matrix A is both symmetric and skew symmetric, then 1

(a) A is a diagonal matrix (b) A is a zero matrix (c) A is a square matrix

(d) None of these

20) If A is square matrix such that A^2 = A, then $(I + A)^3 - 7A$ is equal to 1

(a) A (b) I – A (c) I (d) 3A

21) $\begin{bmatrix} x+10 & y^2+2y \\ 0 & -4 \end{bmatrix} = \begin{bmatrix} 3x+4 & 3 \\ 0 & y^2-5y \end{bmatrix}$ Then the value of x is ________ 1

(a) 6 (b) 3 (c) 2 (d) 0

22) $\begin{bmatrix} 2 & 4 \\ 1 & 3 \end{bmatrix}$ is a matrix of order 1

(a) 1 (b) 4 (c) 2 (d) 3

23) For what real value of y will matrix A be equal to matrix B, where 1

$A = \begin{bmatrix} 3x-4 & 5y \\ 8 & y^2-4y \end{bmatrix}; B = \begin{bmatrix} x+1 & 6y^2+1 \\ 8 & -3 \end{bmatrix}$

(a) 1, 3 (b) No real value (c) 1/3, 1/2 (d) 2 and 3

24) [5] is a scalar matrix of order 1

(a) 2 (b) 5 (c) 0 (d) 1

25) Consider the following information regarding the number of men and women workers in three BPOs I, II and III 1

	Men	Women
I	35	20
II	20	23
III	25	25

What does the entry in the second row and first column represent if the information is represented as a 3 x 2 matrix?

(a) The number of Men in BPO II (b) The number of Women in BPO II

(c) The number of Women in BPO I (d) The number of Men in BPO I

26) $\begin{bmatrix} 3 & 0 \\ 0 & 4 \end{bmatrix}$ is example of 1

(a) an identity matrix (b) a zero matrix. (c) a Scalar m

(d) diagonal matrix.

27) $\begin{bmatrix} 2 & 3 & 1\ 5 & 1 \\ 1 & 2 & 4\ 2 & 2 \end{bmatrix}$ is a matrix of order 1

(a) 2 x 5 (b) 2 x 2 (c) 5 x 2 (d) 5 x 5

28) What is the element in the 2nd row and 1st column of a 2 x 2 Matrix A= [a_{ij}], such that a = (i + 3) (j – 1) 1

(a) 0 (b) 4 (c) -5 (d) 5

29) If, $a_{ij} = \frac{1}{2}|i-3j|$ the value of a_{22} is 1

(a) 0 (b) -2 (c) 2 (d) 3

30) To construct a 2 x 3 matrix [a_{ij}], such that aij = – $\frac{i-3j}{4}$ The values that i and j can take are 1

(a) i = 1, 2, 3 ; j = 1, 2, 3 (b) i = 1, 2 ; j = 1, 2, 3 (c) i = 1, 2 ; j = 1, 2

(d) i = 1, 2, 3 ; j = 1, 2

31) If A is a 3 x 2 matrix, B is a 3 x 3 matrix and Cis a 2 x 3 matrix, then the elements in A, Band C are respectively 1

(a) 6,9,8 (b) 6,9,6 (c) 9,6,6 (d) 6,6,9

32) If a matrix has 8 elements, then which of the following will not be a possible order of the matrix? 1

(a) 1x 8 (b) 2 x 4 (c) 4x2 (d) 4 x 4

33) Total number of possible matrices of order 3 x 3 with each entry 2 or 0 is 1

(a) 9 (b) 27 (c) 81 (d) 512

34) The matrix $P = \begin{bmatrix} 0 & 0 & 4 \\ 0 & 4 & 0 \\ 4 & 0 & 0 \end{bmatrix}$ is not A. 1

(a) square matrix (b) diagonal matrix (c) unit matrix (d) None of these

35) Which of the given values of x and y make the following pair of matrices equal $\begin{bmatrix} 3x+7 & 5 \\ y+1 & 2-3x \end{bmatrix} \begin{bmatrix} 0 & y-2 \\ 8 & 4 \end{bmatrix}$? 1

(a) $x = \frac{-1}{3}, y = 7$ (b) not possible to find (c) $y = 7, x = \frac{-2}{3}$

(d) $x = \frac{-1}{3}, y = \frac{-2}{3}$

36) 1f If $A = \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}, B = \begin{bmatrix} 1 & 3 & 2 \\ 4 & 3 & 1 \end{bmatrix}, C = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$ and $D = \begin{bmatrix} 4 & 6 & 8 \\ 5 & 7 & 9 \end{bmatrix}$, then which of the following is defined? 1

(a) A + B (b) B + C (c) C + D (d) B + D

37) If $\begin{bmatrix} 1 & 2 \\ -2 & -b \end{bmatrix} + \begin{bmatrix} a & 4 \\ 3 & 2 \end{bmatrix} = \begin{bmatrix} 5 & 6 \\ 1 & 0 \end{bmatrix}$, then $a^2 + b^2$ is equal to 1

(a) 20 (b) 22 (c) 12 (d) 10

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

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

39) 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 the matrix $(5A - 2B)$ is 1

(a) mx3 (b) 3x3 (c) mxn (d) 3xn

40) The product $\begin{bmatrix} a & b \\ -b & a \end{bmatrix} \begin{bmatrix} a & -b \\ b & a \end{bmatrix}$ is equal toi s equal to 1

(a) $\begin{bmatrix} a^2+b^2 & 0 \\ 0 & a^2+b^2 \end{bmatrix}$ (b) $\begin{bmatrix} (a+b)^2 & 0 \\ (a+b)^2 & 0 \end{bmatrix}$ (c) $\begin{bmatrix} a^2+b^2 & 0 \\ a^2+b^2 & 0 \end{bmatrix}$ (d) $\begin{bmatrix} a & 0 \\ 0 & b \end{bmatrix}$

41) If the product of two matrices is a zero matrix, then 1

(a) atleast one of the matrix is a zero matrix
(b) both the matrices are zero matrices
(c) it is not necessary that one of the matrices is a zero matrix
(d) None of the above

42) 1

If $A=\begin{bmatrix} 2 & -1 & 3 \\ -4 & 5 & 1 \end{bmatrix}$ and $B=\begin{bmatrix} 2 & 3 \\ 4 & -2 \\ 1 & 5 \end{bmatrix}$, then

(a) only AB is defined (b) only BA is defined
(c) AB and BA both are defined (d) AB and BA both are not defined

43) If A and B are square matrices of the sameorder, then (A + B) (A - B) is equal to 1

(a) A^2-B^2 (b) A^2 - BA - AB - B^2 (c) A^2 - B^2 + BA - AB
(d) A^2 - BA + B^2 + AB

44) The set of all 2x 2 matrices which is commutative with the matrix. 1

$\begin{bmatrix} 1 & 1 \\ 1 & 0 \end{bmatrix}$ with respect to matrix multiplication is

(a) $\begin{bmatrix} p & q \\ r & r \end{bmatrix}$ (b) $\begin{bmatrix} p & q \\ q & r \end{bmatrix}$ (c) $\begin{bmatrix} p-q & p \\ q & r \end{bmatrix}$ (d) $\begin{bmatrix} p & q \\ q & p-q \end{bmatrix}$

45) 1

$A=\begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$, then if the value of α is

(a) $\frac{\pi}{6}$ (b) $\frac{\pi}{3}$ (c) $\frac{3\pi}{2}$ (d) π

46) If A is matrix of order m x nand B is a matrix such that AB' and B' A are both defined, then order of matrix B is 1

(a) m x m (b) nxn (c) nxm (d) mxn

47) 1

The matrix $\begin{bmatrix} 0 & -5 & 8 \\ 5 & 0 & 12 \\ -8 & -12 & 0 \end{bmatrix}$ is a

(a) diagonal matrix (b) symmetric matrix (c) skew-symmetric matrix
(d) scalar matrix

48) If A, B are symmetric matrices of same order, then AB - BA is a 1

(a) skew-symmetric matrix (b) symmetric matrix (c) zero matrix
(d) identity matrix

49) On usiig elementary column operations $C_2 \rightarrow C_2$ - $2C_1$ in the following matrix equation $\begin{bmatrix} 1 & -3 \\ 2 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ 2 & 4 \end{bmatrix}$,we have 1

(a) $\begin{bmatrix} 1 & -5 \\ 0 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ -2 & 2 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ 2 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -5 \\ 0 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ -0 & 2 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & -5 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & -3 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ -2 & 4 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & -5 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ 2 & 0 \end{bmatrix}$

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50) On using elementary column operations $C_2 \to C_2 - 2C_1$ in the following matrix equation $\begin{bmatrix} 1 & -3 \\ 2 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ 2 & 4 \end{bmatrix}$, we have 1

(a) $\begin{bmatrix} 1 & -5 \\ 0 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ -2 & 2 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ 2 & 0 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -5 \\ 0 & 4 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ -0 & 2 \end{bmatrix}$

(c) $\begin{bmatrix} 1 & -5 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & -3 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ -2 & 4 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & -5 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ 2 & 0 \end{bmatrix}$

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51) On using elementary row operation $R_1 \to R_1 - 3R_2$ in the following matrix equation $\begin{bmatrix} 4 & 2 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix} \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$, we have 1

(a) $\begin{bmatrix} -5 & -7 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} 1-7 & \\ 0 & 3 \end{bmatrix} \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$ (b) $\begin{bmatrix} -5 & -7 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 0 & 3 \end{bmatrix} \begin{bmatrix} -1 & -3 \\ 1 & 1 \end{bmatrix}$

(c) $\begin{bmatrix} -5 & -7 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ 1 & -7 \end{bmatrix} \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$ (d) $\begin{bmatrix} 4 & 2 \\ -5 & -7 \end{bmatrix} = \begin{bmatrix} 1 & 2 \\ -3 & -3 \end{bmatrix} \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$

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52) If X, A and B are matrices of the same order such that X = AB, then we apply elementary row transformations simultaneously on X and on the matrix 1

(a) B (b) A (c) AB (d) Both A and B

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53) Matrices A and B will be inverse of each other only if 1

(a) AB=BA (b) AB=BA=0 (c) AB =0, (d) AB=BA=I

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54) If A and B are square matrices of the same order and AB = 3I,then A^{-1} is equal to 1

(a) 3B (b) $\frac{1}{3}B$ (c) $3B^{-1}$ (d) $\frac{1}{3}B^{-1}$

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55) If $\begin{bmatrix} 2x+y & 4x \\ 5x-7 & 4x \end{bmatrix} = \begin{bmatrix} 7 & 7y-13 \\ y & x+6 \end{bmatrix}$, then 1

(a) x=3, y=1 (b) x=2, y=3 (c) x=2, y=4 (d) x=3, y=3

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56) If matrix $A = [a_{ij}]_{2\times 2},\ where\ a_{ij} = \begin{cases} 1, \text{ if } i \neq j \\ 0, \text{ if } i = j \end{cases}$ Then A^2 is equal to 1

(a) I (b) A (c) 0 (d) None ofthese

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57) The value of x such that 1

$$\begin{bmatrix} 1 & 2 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 & 0 \\ 2 & 0 & 1 \\ 1 & 0 & 2 \end{bmatrix} \begin{bmatrix} 0 \\ 2 \\ x \end{bmatrix} = O, \text{i}$$

(a) 1 (b) 0 (c) -1 (d) 3

58) For any two matrices A and B, we have 1

(a) AB=BA (b) AB ≠BA (c) AB = 0 (d) None of these

59) If A and B are symmetric matrices of same order, then (AB' - BA') is a 1

(a) skew-symmetric matrix (b) null matrix (c) symmetric matrix

(d) unit matrix

60) If $F(x) = \begin{bmatrix} \cos x & \sin x \\ -\sin x & \cos x \end{bmatrix}$, then F(x) F(y) is equal to 1

(a) F(x) (b) F(xy) (c) F(x + y) (d) F(x - y)

61) The matrix A satisfies the equation $\begin{bmatrix} 0 & 2 \\ -1 & 1 \end{bmatrix} A = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ then matrix A is 1

(a) $\begin{bmatrix} 2 & 0 \\ 1 & -1 \end{bmatrix}$ (b) $\begin{bmatrix} 1 & -2 \\ 1 & 0 \end{bmatrix}$ (c) $\begin{bmatrix} \frac{1}{2} & -1 \\ \frac{1}{2} & 0 \end{bmatrix}$ (d) $\begin{bmatrix} 1 & 2 \\ -1 & 0 \end{bmatrix}$

62) If $A = \begin{bmatrix} 0 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 0 & 0 \end{bmatrix}$ then A^6 is equal to 1

(a) zero matrix (b) A (c) I (d) none of these

63) If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$ then A^2 - 5A - 7I iS 1

(a) a zero matrix (b) an identity matrix (c) diagonal matrix

(d) none of these

64) A matrix has 18 elements, then possible number of orders of a matrix are 1

(a) 3 (b) 4 (c) 6 (d) 5

65) If matrix A is of order m x n, and for matrix B, AB and BA both are defined, then order of matrix B is 1

(a) m x n (b) n x n (c) n x n (d) n x m

66) The matrix $\begin{bmatrix} 2 & -1 & 4 \\ 1 & 0 & -5 \\ -4 & 5 & 7 \end{bmatrix}$ is 1

(a) a symmetric matrix (b) a skew-symmetric matrix
(c) a diagonal matrix (d) none of these

67) If $A = \begin{bmatrix} 3 & -2 \\ 4 & -2 \end{bmatrix}$ then the value of kif, A^2 = kA - 2I is 1

(a) 0 (b) 8 (c) -7 (d) 1

68) If $A = \begin{bmatrix} 0 & a \\ 0 & 0 \end{bmatrix}$ then A^{16} is__________matrix. 1

69) If matrix X is such that $X \begin{bmatrix} 3 & 9 & -1 \\ 2 & 4 & 5 \end{bmatrix} = \begin{bmatrix} 1 & 3 & 0 \\ 2 & 1 & 5 \end{bmatrix}$ then order of matrix X is________ 1

70) If A and B are matrices of order 3 x m and 3 x n respectively such that m = n, then order of 2A + 7B is__________ 1

71) The negative of matrix is obtained by multiplying the matrix by______ 1

72) If $A = \begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix}$ and $A + A' = I$ then value of a is_____________ 1

73) If A and B are symmetric matrices, then AB - BA is a _________matrix 1

74) If A is a skew symmetric matrix then A^2 is a________ 1

75) If A and B are two matrices such that their multiplication is defined, then (AB)' =_______ 1

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1) (b) 4 1

2) (d) $\frac{16}{5}$ 1

3) (c) $\begin{bmatrix} 3 & 0 \\ 0 & -1 \end{bmatrix}$ 1

4) (d) 64 1

5) (a) I 1

6) (b) AB = BA = I 1

7) (b) $\begin{bmatrix} 0 & 4 \\ 4 & 0 \end{bmatrix}$ 1

8) (a) all zeroes 1

9) (b) x = y 1

10) (c) a zero matrix of order n × n 1

11) (c) m = n 1

12) (d) 512 1

13) (a) k = 3, p = n 1

14) (b) 2 × n 1

15) (a) Skew symmetric matrix 1

16) (b) $\frac{\pi}{6}$ 1

17) (d) AB = BA = I 1

18) (c) $1 - \alpha^2 - \beta\gamma = 0$ 1

19) (b) A is a zero matrix 1

20) (c) I 1

21) (b) 3 1

22) (c) 2 1

23) (b) No real value 1

24) (d) 1 1

25) (a) The number of Men in BPO II 1

26) (d) diagonal matrix. 1

27) (a) 2 x 5 1

28) (a) 0 1

29) (b) -2 1

30) (b) i = 1, 2 ; j = 1, 2, 3 1

31) (b) 6,9,6 1

32) (d) 4 x 4 1

33) (d) 512 1

34) (c) unit matrix 1

35) (b) not possible to find 1

36) (d) B + D 1

37) (a) 20 1

38) (c) -6,-4,-9 1

39) (d) 3xn 1

40) (a) $\begin{bmatrix} a^2+b^2 & 0 \\ 0 & a^2+b^2 \end{bmatrix}$ 1

41) (c) it is not necessary that one of the matrices is a zero matrix 1

42) (c) AB and BA both are defined 1

43) (c) $A^2 - B^2 + BA - AB$ 1

44) (d) $\begin{bmatrix} p & q \\ q & p-q \end{bmatrix}$ 1

45) (b) $\frac{\pi}{3}$ 1

46) (d) mxn 1

47) (c) skew-symmetric matrix 1

48) (a) skew-symmetric matrix 1

49) (d) $\begin{bmatrix} 1 & -5 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ 2 & 0 \end{bmatrix}$ 1

50) (d) $\begin{bmatrix} 1 & -5 \\ 2 & 0 \end{bmatrix} = \begin{bmatrix} 1 & -1 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -5 \\ 2 & 0 \end{bmatrix}$ 1

51) (a) $\begin{bmatrix} -5 & -7 \\ 3 & 3 \end{bmatrix} = \begin{bmatrix} 1-7 & \\ 0 & 3 \end{bmatrix} \begin{bmatrix} 2 & 0 \\ 1 & 1 \end{bmatrix}$ 1

52) (b) A 1

53) (d) AB=BA=I 1

54) (b) $\frac{1}{3}B$ 1

55) (b) x=2, y=3 1

56) (a) I 1

57) (c) -1 1

58) (d) None of these 1

59) (a) skew-symmetric matrix 1

60) (c) F(x + y) 1

61) (c) $\begin{bmatrix} \frac{1}{2} & -1 \\ \frac{1}{2} & 0 \end{bmatrix}$ 1

62) (c) I 1

63) (c) diagonal matrix 1

64) (c) 6 1

65) (d) n x m 1

66) (d) none of these 1

67) (d) 1 1

68) Zero, as $A^2 = \begin{bmatrix} 0 & a \\ 0 & 0 \end{bmatrix} \begin{bmatrix} 0 & a \\ 0 & 0 \end{bmatrix} = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix} \therefore A^{16} = \left(A^2\right)^8 = O$ 1

69) 2 x 2, as (2 x 2) x (2 x 3) = 2 x 3 1

70) 3 x m or 3 x n, as order of sum of two matrices is same as order of given matrices. 1

71) -1, as (-1)A = -A. 1

72) 1

$\frac{\pi}{3}$, as $\begin{bmatrix} \cos\alpha & -\sin\alpha \\ \sin\alpha & \cos\alpha \end{bmatrix} + \begin{bmatrix} \cos\alpha & \sin\alpha \\ -\sin\alpha & \cos\alpha \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$

$\Rightarrow 2\cos\alpha = 1 \Rightarrow \cos\alpha = \frac{1}{2} \Rightarrow \alpha = \frac{\pi}{3}$

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73) 1

skew symmetric, as (AB - BA)' = (AB)' - (BA)' = B'A' - A'B' = BA - AB = -(AB - BA) ($\because$ A' = A, B' = B)

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74) 1

Symmetric matrix $\text{e.g. } A = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$

$\text{then } A^2 = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix} \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix} = \begin{bmatrix} -1 & 0 \\ 0 & -1 \end{bmatrix}$

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75) B'A', as result 1
