MTH501 FINAL TERM SOLVED MCQs FILE
BY LIBRIANSMINE
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_____

Question No: 1 (Marks: 1) - Please choose one
If for a linear transformation the equation T(x) =0 has only the trivial solution then T is

► **One-to-one**
►Onto

Question No: 4 (Marks: 1) - Please choose one

The equation x = p + t v describes a line

►through v parallel to p

► **through p parallel to v**
►through origin parallel to p

Question No: 6 (Marks: 1) - Please choose one

Every linear transformation is a matrix transformation

►True
►False

Question No: 7 (Marks: 1) - Please choose one
A null space is a vector space.

►**True**
►False

Question No: 8 (Marks: 1) - Please choose one

If two row interchanges are made in succession, then the new determinant

►equals to the old determinant
►equals to -1 times the old determinant

Question No: 9 (Marks: 1) - Please choose one

The determinant of A is the product of the pivots in any echelon form U of A , multiplied by $(-1)^r$, Where r is

►the number of rows of A

►the number of row interchanges made during row reduction from A to U
►the number of rows of U

►the number of row interchanges made during row reduction U to A

Question No: 10 (Marks: 1) - Please choose one If A is

invertible, then $\det(A)\det(A^{-1})=1$.

►True
►False

Question No: 12 (Marks: 1) - Please choose one

The product of upper triangular matrices is

►lower triangular matrix

►upper triangular matrix
►diagonal matrix

Question No: 13 (Marks: 1) - Please choose one

The matrix multiplication is associative

►**True**
►False

Question No: 14 (Marks: 1) - Please choose one We can

add the matrices of _____.

►**same order**
►same number of columns.

►same number of rows

►different order

Question No: 15 (Marks: 1) - Please choose one

By solving system of equations with iterative method, we stop the process when the entries in two successive iterations are _____.

►**repeat(same)**
►large difference

►different

Question No: 16 (Marks: 1) - Please choose one

Jacobi's Method is _____ converges to solution than Gauss Siedal Method.

►slow
►fast

►better

Question No: 17 (Marks: 1) - Please choose one
A system of linear equations is said to be homogeneous if it can be written in the form _____.

►AX = B

►**AX = 0**
►AB = X

►$X = A^{-1}$

Question No: 18 (Marks: 1) - Please choose one
The row reduction algorithm applies only to augmented matrices for a linear system.

►True

►**False**

Question No: 19 (Marks: 1) - Please choose one
Whenever a system has no free variable, the solution set contains many solutions. ►
True

► **False**

Question No: 20 (Marks: 1) - Please choose one Which of

the following is not a linear equation?

► $x_1 + 4x_2 + 1x_3$

► $x_1 + 1$

► $x_1 + 4x_2 + \sqrt{2}x_3 + \sqrt{4}$

► $x_1 + 4x_1x_2 + \sqrt{2}x_3 + \sqrt{4}$

Question No: 21 (Marks: 1) - Please choose one

If A is a $2X2$ matrix, the area of the parallelogram determined by the columns of A is

►det A
►adj A

Question No: 22 (Marks: 1) - Please choose one
Cramer's rule leads easily to a general formula for

►the inverse of n x n matrix A
►the adjugate of an matrix A

►the determinant of an matrix A

Question No: 23 (Marks: 1) - Please choose one

The transpose of a lower triangular matrix is

►Lower triangular matrix

►Upper triangular matrix

►Diagonal matrix

Question No: 24 (Marks: 1) - Please choose one

The transpose of an upper triangular matrix is

►Lower triangular matrix

►Upper triangular matrix

►Diagonal matrix

Question No: 25 (Marks: 1) - Please choose one

Let A be a square matrix of order 3x3 with det (A)=21 , then

Det (2A)

►168

►186

►21

►126

Question No: 26 (Marks: 1) - Please choose one

A basis is a linearly independent set that is as large as possible.

►True

►False

Question No: 27 (Marks: 1) - Please choose one

Let A be an n X n matrix. If for each b in the equation Ax=b has a solution then ▶A has pivot position in only one row.

▶Columns of A span

▶Rows of A span

Question No: 28 (Marks: 1) - Please choose one

If the columns of A are linearly independent, then

- **Columns of A span Rn**
- Rows of A span Rn
- A has a pivot only in one row

Question No: 29 (Marks: 1) - Please choose one
The determinant of a triangular matrix is the sum of the entries of the main diagonal.

- **True**
- **False**

Question No:30 (Marks: 1) - Please choose one If A^T is not invertible, then A is not invertible.

- **True**
- **False**

Question No: 31 (Marks: 1) - Please choose one

Col A is all of $\square^m$ if and only if

▶the equation $Ax \square 0$ has a solution for each b in $\square^m$

▶the equation $Ax \square b$ has a solution for each b in $\square^m$

▶the equation $Ax \square b$ has a solution for a fixed b in $\square^m$.

Question No: 33 (Marks: 1) - Please choose one
Two vectors are linearly dependent if and only if they lie

▶on a line parallel to x-axis

▶on the same line through origin

►on a line parallel to y-axis

Question No: 36 (Marks: 1) - Please choose one

$$\begin{vmatrix} a & b & c & a \\ 3e & 3f & g & \end{vmatrix} \quad \begin{vmatrix} b & c & d & \\ h & i & g & \end{vmatrix} \quad \begin{vmatrix} e & f & \square 5 & 3d \\ h & i & & \end{vmatrix}$$

If then will be

►**15**
►45

►135

►60

Question No: 37 (Marks: 1) - Please choose one

For an n×n matrix $(A^t)^t$ =

►A^t

►A
►A^{-1}

►$(A^{-1})^{-1}$

Question No: 38 (Marks: 1) - Please choose one

Each Linear Transformation T from R^n to R^m is equivalent to multiplication by a matrix A of order

►m´n ☹
►n´m

►n´n

►m´m

Question No: 40 (Marks: 1) - Please choose one

How many subspaces R2 have?

- **only two: {0} and R2**
- Only four: {0} x- axis and y -axis and R ➢ Infinitely many.
- None of the above.

Question No: 41 (Marks: 1) - Please choose one

Which statement about the set S is false where S = {(1, 1, 3), (2, 3, 7),(2, 2, 6)}

- The set S contain an element which is solution of the equation 5x – y-
- **➢ The Set S is linearly independent.**
- The set S contain two elements which are multiple of each other. ➢ The Set S is linearly dependent.

Question No: 42 (Marks: 1) - Please choose one Basis is a

spanning set that is as small as possible.

- **True**
- False

Question No: 43 (Marks: 1) - Please choose one

For any 3x3 matrix A where det (A) = 3, then det (2A) = _____.

24
20

15

6

Question No: 45 (Marks: 1) - Please choose one

If a system of linear equations is inconsistent then it has _____

- Infinite solutions
- Finite solutions
- Unique solution
- **No solution**

Question No: 46 (Marks: 1) - Please choose one

Two simultaneous linear equations in two variables have no solution if their corresponding lines are _____.

- …
- …
- …
- …

Question No: 48 (Marks: 1) - Please choose one

Which of the following is the simplified form of -1 [-1
2] + [2 3]?

- …
- …
- …
- …

Question No: 49 (Marks: 1) - Please choose one

If v_1=(2,2,2), v_2=(0,0,3), and v_3=(0,1,1) span R^3 , then which of the following is true for any arbitrary $b \in (b_1,b_2,b_3) \in R^3$?

- $(0,1,1) = k_1(b_1,b_2,b_3)+k_2(2,2,2)+k_3(0,0,3)$
- **$(b_1,b_2,b_3) = k_1(2,2,2)+k_2(0,0,3)+k_3(0,1,1)$**
- $(0,0,3) = k_1(2,2,2)+k_2(b_1,b_2,b_3)+k_3(0,1,1)$
- $(0,1,1) = k_1(2,2,2)+k_2(0,0,3)+k_3(b_1,b_2,b_3)$

Question No: 50 (Marks: 1) - Please choose one

If a homogeneous system Ax=0 has a trivial Solution, then which of the following is (are) the

Value(s) of the vector x?

- -1
- **0**
- 1
- 2

Question No: 51 (Marks: 1) - Please choose one

$\vec{v_1} = (2,1), \vec{v_2} = (3,4)$ *and* $\vec{v_3} = (7, 8)$ Which of the following is true?

- $\{v_1, v_2, v_3\}$ is linearly dependent
- **$\{v_1, v_2, v_3\}$ is linearly independent** (set of vectors does not contain zero vector) ✓ The vector equation has trivial solution
- $\vec{v_1} = \frac{2}{3} \vec{v_2}$

Question No: 52 (Marks: 1) - Please choose one

Since every linear transformation $T : R^n \to R^m$ is actually a matrix transformation, then which of the following is the alternate notation for the transformation?

- $A\vec{x} = \vec{x}$
- $A\vec{x} = T(\vec{x}) = \vec{x} = A\vec{x}$
- $T(\vec{x}) = A\vec{x}$

- Singular matrix

Question No: 56 (Marks: 1) - Please choose one

If the matrix is partitioned into square sub-matrices, then Which of the following is true for matrix A?

- **Block diagonal matrix**
- Block upper triangular matrix
- Diagonal-constant matrix
- Partitioning is not possible in the matrix A

Question No: 57 (Marks: 1) - Please choose one

If A is a matrix of order m x n, then which of the following is true for LU factorization of A?

- **The order of L is m x m and the order of U is m x n**
- The order of L is m x p and the order of U is p x n
- The order of both L and U is m x m
- The order of both L and U is m x n

Question No: 58 (Marks: 1) - Please choose one

If $A\vec{x} = \vec{b}$ and factorization of A is LU, then Which of the following pair of equations can be used to solve $LU\vec{x} = \vec{b}$ for the value of 'x'?

- $Ux = y$ and $Ly = b$
- $Lx = y$ and $Uy = b$
- $Ub = y$ and $Ly = x$
- $Lb = y$ and $Uy = x$

Question No:59 (Marks: 1) - Please choose one

If a system of equations is solved using the Jacobl's method, then which of the following is NOT true about the matrix M that is derived from the coefficient matrix?

- All of its entries below the diagonal must be zero
- All of its entries above the diagonal must be zero
- It may or may not be invertible
- It is a non-singular matrix

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