MTH501-Linear algebra

Mid TERM Solved MCQS

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1. If the determinant of the matrix $A = \begin{bmatrix} 1 & 3 & 5 \\ 3 & 1 & 1 \\ 5 & 7 & 7 \end{bmatrix}$ is 32 and the matrix B is obtained by multiplying any row of A with an integer value 4, then which of the following is true for the matrix B?

   Its determinant is 128.

2. Let V be a five-dimensional vector space, and let S be a subset of V which spans V. Then S

   Must have at most five elements

3. The Elementary Row operations: $[R_2 \to R_2 \to 4R_1]$ and $[R_3 \to R_3 \to 6R_1]$ are performed on to get $\begin{pmatrix} 1 & 2 & -5 \\ -4 & 1 & -6 \\ 6 & 3 & -4 \end{pmatrix} \sim$ ---------?

   Answer $\begin{pmatrix} 1 & 2 & -5 \\ 0 & 1 & 26 \\ 0 & -9 & -26 \end{pmatrix}$

4. Let A and B be the square matrices. Then A and B are invertible with $B = A^{-1}$ and $A = B^{-1}$ if and only if $AB = AB$ equals to a (an) _____ matrix.

   Identity

5. If λ is an eigenvector of A, then every nonzero vector x such that Ax = λx is called an _____ of A corresponding to _____.

   Eigenvector, λ

6. If x + 2 is a factor of the characteristic polynomial of matrix C then an eigenvalue of C is

   -2

7. Let A be n × n matrix, then A is invertible if and only if

   det A is not zero

8. Gauss-Seidel method is also termed as a method of

   Successive Displacement

9. If one of the eigenvalues of is zero, $\left[A\right]_{n\times n}$ it implies ___.

   The determinant of $\left[A\right]$ is zero

10. If u + v = u + w, then:

    v = w

11. If the determinant of the matrix $A=\begin{bmatrix}2&3&4\\1&2&3\\3&4&5\end{bmatrix}$ is -1 and the matrix B is obtained by adding 2 times of the second row in the first row of the matrix A, then which of the following is true for the matrix B?

    Its determinant is -1.

12. Which of the following will be the Matrix Product corresponding to Linear Combination: $\begin{pmatrix}-2\\5\end{pmatrix}x+\begin{pmatrix}3\\1\end{pmatrix}y$?

    $\begin{pmatrix}-2&3\\5&1\end{pmatrix}\begin{pmatrix}x\\y\end{pmatrix}$

13. The solution of Ax = b exists if and only if b can be written as a linear combination of _____ of A.

    Columns

14. A sufficient condition for the jacobi's method to converge for the linear system Ax=b

    A is diagonally dominant

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

    parallel and distinct

16. Which of the following will be the Linear Combination corresponding to $\begin{pmatrix}-2&3\\5&1\end{pmatrix}\begin{pmatrix}x\\y\end{pmatrix}$?

Answer $\begin{pmatrix} -2 \\ 5 \end{pmatrix} x + \begin{pmatrix} 3 \\ 1 \end{pmatrix} y$

17. If a homogeneous system $Ax = 0$ has a trivial solution, then which of the following is (are) the value(s) of the vector x?

0

18. A square matrix A is said to be diagonal if A is similar to a matrix

Diagonal matrix

19. Why inverse of the matrix A= [1 2] is NOT possible?

Because it is a saquare matrix

20. Which of the following Elementary Row operations would perform in order to get $\begin{pmatrix} 1 & 2 & -5 \\ -4 & 1 & -6 \\ 6 & 3 & -4 \end{pmatrix} \sim \begin{pmatrix} 1 & 2 & -5 \\ 0 & 9 & -36 \\ 0 & -9 & 26 \end{pmatrix}$?

$R_2 \to R_2 + 4R_1, R_3 \to R_3 \to 6R_1$

21. What is the maximum possiblle number of pivots in a 6 × 6 matrix?

6

22. A homogeneous linear system always has the trivial solution: there are only two possibilities for its solutions:

The system has infinitely much solutionsnin addition to trivial solution

23. A system of linear equations is said to be homogeneous if the constant terms are all

Zero

24. In A is a square matrix, then the minor of entry ith row and jth column is to be the determinant of the sub matrix that remains when the ith row and jth column of A are

Added

25. 7x is an algebraic term in which 7 is a _____ and x is a _____.

coefficient, variable

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26. Which of the following is the coefficient matrix for the

$$\begin{aligned} x_1 - 2x_2 + x_3 &= 0 \\ 2x_2 - 7x_3 &= 8 \\ -4x_1 + 3x_2 + 9x_3 &= \end{aligned}$$

system

Answer $\begin{bmatrix} 1 & -2 & 1 \\ 0 & 2 & -7 \\ -4 & 3 & 9 \end{bmatrix}$

27. Let 'Ax = 0' be a homogeneous linear system of 'n' equations and 'n' unknowns. Then, the coefficient matrix 'A' is invertible if and only if this system has _____ solution.

Trivial

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

Parallel and distinct

29. The solution of Ax = b exists if and only if b can be written as a linear combination of _____ of A.

Columns

30. Let V be a five-dimensional vector space, and let S be a subset of V which spans V. Then S

Must have at most five elements

31. Gauss-Seidel method is also termed as a method of

Successive Displacement

32. If A be the standard matrix of linear transformation $T : R^n \rightarrow R^m$, then which of the following is true for the mapping from R^n onto R^m?

The columns of A R^m span .

33. If T be a transformation, then which of the following is true for its linearity?

$T(cu^r + dv^r) : cT^r(u^r) + dT(v^r)$ whre 'c' and 'd' are scalars

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34. Which of the following is true for the matrix $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 2 & 0 \\ 0 & 0 & 3 \end{bmatrix}$

It is a diagonal matrix.

35. $9x^2 + 3x + 4$ is _____.

Quadratic equation

36. An n × n matrix A is said to be diagonalizable if and only if A has n _____ eigenvectors.

Linearly Independent

37. 7x is an algebraic term in which 7 is a _____ and x is a _____.

Coefficient, variable

38. Let A be n × n matrix, then A is invertible if and only if

det A is not zero

39. What is Eigen value?

A scalar associated with a given linear transformation

40. If one of the eigenvalues of $\left[A \right]_{n \times n}$ is zero, it implies _____.

The determinant of $\left[A \right]$ is zero

41. Which of the following is true about the existence of free variables (parameter) in a system of linear equations?

They guarantee the Consistency.

42. If $A = \begin{bmatrix} 2 & 1 \\ 4 & 3 \end{bmatrix}$ and $B = \begin{bmatrix} 1+1 & 2-1 \\ 2+2 & 4-1 \end{bmatrix}$, then which of the following is true for A and B?

A and B are equal matrices

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43. If the determinant of the matrix $A = \begin{bmatrix} 2 & 3 & 4 \\ 1 & 2 & 2 \\ 3 & 4 & 5 \end{bmatrix}$ is -1 and the matrix B is obtained by adding 2 times of the second row in the first row of the matrix A, then which of the following is true for the matrix B?

Its determinant is -1.

44. If $Ax^t = b^r$ and factorization of A is LU, then which of the following pair of equations can be used to solve $LUx^t = b^r$ for value of 'X^r'?

$Ux^t = y^r$ *and* $LY^r = b^r$

45. A sufficient condition for the jacobi's method to converge for the linear system Ax=b

A is diagonally dominant

46. Why inverse of the matrix A= [1 2] is NOT possible?

Because it is a saquare matrix

47. A 3 × 3 identity matrix have three and _____ eigen values.

Same

48. A system of linear equations is said to be homogeneous if it can be written in the form _____.

AX=0

49. Let A be the matrix of order 2x3 and B be the matrix of order 3x5, and then which of the following is the order of the matrix AB?

2x5

50. A homogeneous linear system always has the trivial solution: there are only two possibilities for its solutions:

The system has infinitely many solutionsnin addition to trivial solution

51. What is the maximum possiblle number of pivots in a 6 × 6 matrix?

6

52. How many Pivot partitions the matrix: $\begin{pmatrix} 2 & 3 & 1 \\ 4 & 6 & 2 \end{pmatrix}$ will have?

2

53. If , $A = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & k & 1 \end{bmatrix}$ then which of the following is true for the matrix?

det(A) = 1

54. If $v_1^r, v_2^r,$ and v_3^r are in R^n then which of the following is equivalent to $(v_1, v_2, v_3)\begin{bmatrix} 2 \\ -7 \\ 5 \end{bmatrix}$

$\left(2v_1^r - v_2^r + v_3^r\right)$

55. For any subspace W of a vector space V, which one is not the axiom for subspace.

For all u, v in W and u – v must be in W.

56. Which one is not the axiom for vector space?

0.u = u

57. The Gauss-Seidel method is applicable to strictly diagonally dominant matrix.

TRUE

58. At what condition det(AB)=(detA)(detB) is possible?

When A and B are n x n matrices

6

60. If a multiple of one row of a square matrix A is added to another row to produce a matrix B, then which of the following condition is true?

detB = detA

61. The Jacobi's method is a method of solving a matrix equation on a matrix that has no zeros along its main diagonal.

TRUE

62. While using the Cramer's rule, if determinant D = 0, and other determinant is not zero then how many solutions are there?

No solution

63. Which of the following is all permutations of {1,2}?

(1, 2, 2, 1)

64. By using determinants, we can easily check that the solution of the given system of linear equation exits and it is unique.

TRUE

65. If a multiple of one row of a square matrix A is added to another row to produce a matrix B, then which of the following condition is true?

detB = k detA

66. At what condition the Cramer's formula is valid for linear systems?

When matrix is n x n

67. A matrix has not the same determinant if we add a multiple of a column to another column.

TRUE

68. The Jacobi's method is a method of solving a matrix equation on a matrix that has no zeros along its main diagonal.

TRUE

69. Which of the following is the volume of the parallelepiped determined by the

|det A|

70. For any 3x3 matrix A where det (A) = 3, then det (2A) = _____.
    6
71. Which one is not the axiom for vector space?
    0.u = u

72. Which of the following is NOT the axiom for vector space where u, v, w in V are set ovectors and l, m, n are scalars?
    u.v =v.u

73. If two rows or columns of a square matrix are identical, then det (A)wil be _____.
    zero

74. If A is strictly diagonally dominant, then A is _____.
    invertible

75. The Gauss-Seidel method is applicable to strictly diagonally dominant matrix.
    TRUE

76. If the absolute value of each diagonal entry exceeds the sum of the absolute values of the other entries in the same row then a matrix A is called:
    strictly diagonally dominant

77. The Jacobi's method is a method of solving a matrix equation on a matrix that has no zeros along its main diagonal.
    TRUE

78. Which one is not the axiom for vector space?
    0.u = u

79. Let W = {(x, y) such that x, y in R and x = y}. Is W a vector subspace of plane.:
    YES

80. If A is a triangular matrix, then det(A) is the product of the entries on the _____.

    Main diagonal of A

81. By using determinants, we can easily check that the solution of the given system of linear equation exits and it is unique.

TRUE

82. If a matrix A is invertible than adj(A) is also invertible.

TRUE

83. If all the entries of a row or a column of a square matrix are zero, then det (A) will be _____.

Zero

84. Consider a system of linear equations A x =b where A is a3 ×3 matrix having 3 pivot positions, then which

Statement is false about the system Ax =b

There is only one free variable in solution of that system.

85. If a finite set S of non zero vectors span a vector space V, then some subset of S is a basis for V.

false

86. If rank of a3 x 5 matrix is 3 then dimension of its Null space is

0

87. If matrix A has zero as an eigenvalue then which statement(s) about A must be true.

I. Matrix A is not invertible.

II. Matrix A will also have an eigenvalue 2.

III. Matrix is diagonalizable.

I only

88. Determinant of a non-invertible(singular) matrix always

Vanish

89. Rank of a zero matrix of any order is

Zero

90. A matrix A and its transpose have the same determinant.

True

91. If a system of equations is solved using the Jacobi's method , then which of the following is the most appropriate answer about the matrix M that is derived from the coefficient matrix ?

All of its entries above the diagonal must be zero.

92. If A is a square matrix, then the Minor of entry I th row and j th column is to be the determinant of the sub matrix that remains when the I th row and j th column of A are:

Deleted

93. If M=[3] then which of the following is the determinant of the matrix M?
Select correct option:

3

94. Which of the following is all permutations of {1,2}?

(1, 2, 2, 1)

95. If M is a square matrix having two rows equal then which of the following about the determinant of the matrix is true?

det (M)=0

96. If a system of equations is solved using the Gauss-Seidel method, then which of the following is the most appropriate answer about the matrix M that is derived from the coefficient matrix ?

All of its entries above the diagonal must be zero.

97. Let W = {(1, y) such that y in R}. Is W a vector subspace of plane. Select correct option:

NO

98. At what condition the Cramer's rule fails?

When the determinant of the coefficient matrix is zero

99. All the lines those passes through origin are not the subspace of a plane.

FALSE

100. A matrix A and its transpose have the same determinant.

TRUE

101. Cramer's rule is a formula for solving systems of equations by _____.

Determinants

102. If a system of equations is solved using the Jacobi's method , then which of the following is the most appropriate answer about the matrix M that is derived from the coefficient matrix ?

All of its entries below the diagonal must be zero

103. Which of the following is all permutations of {1,2}?

(1,2) and (2,1)

104. Determinant of a non-invertible(singular) matrix always

Vanish

105. Rank of a zero matrix of any order is

Zero

106. For an n×n matrix (At) t =

A

107. What is the largest possible number of pivots a 4×6 matrix can have? ►

4

108. The characteristic polynomial of a 5×5 matrix is $\lambda^5 - 4\lambda^4 - 45\lambda^3$, the eigenvalues are

0, 0, 0,-5, 9

109. A is diagonalizable if A =PDP^{-1} Where

D is a diagonal matrix and P is invertible matrix

110. The inverse of an invertible lower triangular matrix is

Lower triangular matrix

111. If P is a parallelepiped in R3 , then {volume of T (P)} = |detA|. {Volume of P}

Where T is determined by a 3 *3 matrix A

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112. Let A be a^{n*m} matrix of rank then row space of A has dimension

R

113. The dimension of the vector space p_4 is

4

114. Let $[u=(3,-2), V=(4,5)]$.For the weighted Euclidean inner $\langle u, v \rangle = 4u_1v_1 + 5u_2v_2$ product $\langle u, v \rangle$

-2

115. Let A be n*n matrix whose entries are real. If λ is an eigenvalue of A with X a corresponding eigenvector in C^n, then

Ax= λ x

116. Which one is the numerical method used for approximation of dominant eigenvalue of a matrix

Guass Seidal method

117. The matrix equation represents a system of linear equations commonly referred to as the

Normal equations for $\hat{x}$

118. Let have eigenvalues 2, 5, 0,-7, and -2. Then the dominant eigenvalue for A is

$\lambda = -7$

119. If W is a subspace of R^m , then the transformation $T: R^m \to W$ that maps each vector x in R^m into its orthogonal x in W is called the orthogonal projection of

R^m In W

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

The Set S is linearly independent.

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121. How many subspaces R2 have?
Infinitely many

122. The set of vectors {(5,0,0), (7,2,-6), (9,4,-8)} is,
Linearly dependent

123. is a 2 * 2 matrix, the area of the parallelogram determined by the columns of A is
det A

124. transpose of an lower triangular matrix is
Upper triangular matrix

125. A be a square matrix of order 3 * 3 with det(A) =21 , then det(2 A) =
168

126. Basis is a linearly independent set that is as large as possible.
True

127. A be an m × n matrix. If for each b in m $\mathbb{R}^m$ the equation Ax=b has a solution then
A has pivot position in only one row (may be this option is true)

128. equation x = p + t v describes a line
Through origin parallel to p

129. A be an m × n matrix. If for each b in m $\mathbb{R}$ the equation Ax=b has a solution then
A has pivot position in only one row

130. Given the system $\begin{aligned} x_1 - 2x_2 + x_3 &= 8 \\ 2x_2 - 7x_3 &= 0 \\ -4x_1 + 3x_2 + 9x_3 &= -6 \end{aligned}$ the augmented matrix for the system is

131. $\begin{bmatrix} 1 & -2 & 1 & 8 \\ 0 & 2 & -7 & 0 \\ -4 & 3 & 9 & -6 \end{bmatrix}$

132. $\begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix} = 5$ then $\begin{vmatrix} a & b & c \\ 3d & 3e & 3f \\ g & h & i \end{vmatrix}$ will be
45

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

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134. Reduced echelon form of the matrix $\begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 4 \end{bmatrix}$ is

$\begin{bmatrix} 1 & 0 & -1 \\ 2 & 3 & 2 \end{bmatrix}$

135. Every linear transformation is a matrix transformation
True

136. Null space is a vector space.
True

137. 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 U.

138. A is invertible, then det(A)det(A-1)=1.
False

139. The matrix multiplication is associative
True

140. Can add the matrices of _____.
Same order

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

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

143. Find the condition for r and s such that the vectors (r,2,s) , (r+1,2,1) and (3,s,1) are linear dependent.
Column vector

144. Standard matrix for transformation T(x1, x2) = (−x1 + x2 , x1 − x2)is

$\begin{bmatrix} -1 & 1 \\ 1 & -1 \end{bmatrix}$

145. Matrix $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$ is singular if
None of these

146. All the lines those passes through origin are not the subspace of a plane.
FALSE

147. Why inverse of the matrix A= [1 2] is NOT possible?
Because it is a rectangular matrix.

148. Let W = {(1, y) such that y in R}. Is W a vector subspace of plane.
NO

149. If M is a square matrix having two rows equal then which of the following about the determinant of the matrix is true?
det (M)=0

150. If a system of equations is solved using the Jacobi's method , then which of the following is the most appropriate answer about the matrix M that is derived from the coefficient matrix ?
All of its entries below and above the diagonal must

151. Which of the following is the volume of the parallelepiped determined by the columns of A where A is a 3 x 3 matrix?
|det A|

152. If all the entries of a row or a column of a square matrix are zero, then det (A) will be _____.
Zero

153. If both the Jacobi and Gauss-Seidel sequences converge for the solution of Ax=b, for any initial x(0), then which of the following is true about both the solutions?
Unique solution

154. How many different permutations are there in the set of integers {1, 2, and 3}?
8

Question No: 1

If for a linear transformation the equation T(x)= 0 has only the trivial solution then T is

- **one-to-one**
- onto

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Question No: 2

Which one of the following is an matrix?

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

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

- $\begin{vmatrix} 1 & 0 \\ 2 & -3 \end{vmatrix}$
- $\begin{vmatrix} 1 & 2 \\ 0 & 3 \end{vmatrix}$
-

Question No: 3

$$A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

Let and let k be a scalar .A formula that relates det kA to k and det A is

- **det kA= k det A**
- det kA = det (k+A)
- det k A = k^2 det A
- det kA = det A

Question No:

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: 5

Determine which of the following sets of vectors are linearly dependent.

$$v_1 = \begin{bmatrix} 1 \\ \\ 2 \end{bmatrix}, \quad v_2 = \begin{bmatrix} 6 \\ \\ 2 \end{bmatrix}$$

- $$v_1 = \begin{bmatrix} 3 \\ 2 \\ 1 \end{bmatrix}, \quad v_2 = \begin{bmatrix} 6 \\ 2 \\ 1 \end{bmatrix}$$
- $$v_1 = \begin{bmatrix} 5 \\ 2 \\ 3 \end{bmatrix}, \quad v_2 = \begin{bmatrix} 10 \\ 4 \\ 6 \end{bmatrix}$$

Question No: 6

Every linear transformation is a matrix transformation

- **True**
- False

Question No: 7

A null space is a vector space.

- **True**
- False

Question No: 8

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

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

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

- **True**
- False

Question No: 11

The product of upper triangular matrices is

- lower triangular matrix
- **upper triangular matrix**
- diagonal matrix

Question No: 12

The matrix multiplication is associative

- **True**
- False

Question No: 14

We can add the matrices of _____.

- **same order**
- same number of columns.
- same number of rows
- different order

Question No: 15

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

- repeat
- large difference
- different
- **Same**

Question No: 16

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

- slow
- **fast**
- better

Question No: 17

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

The row reduction algorithm applies only to augmented matrices for a linear system.

- True
- **False**

Question No: 19

Whenever a system has no free variable, the solution set contains many solutions.

- True
- **False**

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Question No: 21

If a system of equations is solved using the Gauss-Seidel method, then which of the following is the most appropriate answer about the matrix M that is derived from the coefficient matrix ?

All of its entries on the diagonal must be zero.

All of its entries below the diagonal must be zero.

All of its entries above the diagonal must be zero.

All of its entries below and above the diagonal must be zero.

Question No: 22

The determinant of a diagonal matrix is the product of the diagonal elements.

Select correct option:

- **TRUE**
- FALSE

Question No: 23

By using determinants, we can easily check that the solution of the given system of linear equation exits and it is unique.

- FALSE
- **TRUE**

Question No: 24

A matrix A and its transpose have the same determinant.

- **TRUE**
- FALSE

Question No: 25

If both the Jacobi and Gauss-Seidel sequences converge for the solution of Ax=b, for any initial x(0), then which of the following is true about both the solutions?

- No solution
- **Unique solution**
- Different solutions
- Infinitely many solutions

Question No: 26

The value of the determinant of a square matrix remains unchanged if we multiply each element of a row or a column by some scalar.

- TRUE
- **FALSE**

Question No: 27

How many different permutations are there in the set of integers {1,2,3}?

- 2
- 4
- 6
- **8**

Question No: 28

If A is n x n matrix and det (A) = 2 then det (5A) = _____.

- **10**
- 32
- 5
- 8

Question No: 29

Every vector space has at least two subspaces; one is itself and the second is:

- multiplication of vectors
- addition of vectors
- subspace {0}
- **scalar multiplication of vectors**

Question No: 30

If one row of A is multiplied by k to produce B, then which of the following condition is true?

- det(AB) = (detA)(detB)
- **detB = k detA**
- detB = – detA
- detB = detA

Question No: 1

If for a linear transformation the equation T(x) =0 has only the trivial solution then T is

- **One-to-one**
- Onto

Question No: 2

Which one of the following is an elementary matrix?

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

- det kA= k det A
- det kA = det (k+A)
- **det k A = k^2 det A**
- det A = k.det A

Question No: 4

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: 22

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

The transpose of a lower triangular matrix is

- Lower triangular matrix
- Upper triangular matrix
- Diagonal matrix

Question No: 24

The transpose of an upper triangular matrix is

- Lower triangular matrix
- Upper triangular matrix
- Diagonal matrix

Question No: 25

Let A be a square matrix of order 3x3 with det (A)=21 , then
Det (2A)

- 168
- 186
- 21
- 126

Question No: 26

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

- True
- False

Question No: 27

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

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

The determinant of a triangular matrix is the sum of the entries of the main diagonal.

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

Question No:30

If A^T is not invertible, then A is not invertible.

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

Two vectors u and v are orthogonal to each other if _____.

Select correct option:

u . v = 0

u . v = 1

u + v = 0

u - v = 0

Question # 2

If the columns of a matrix are linearly independent then the matrix is _____.

Select correct option:

invertible (A) is *INVERTIBLE IF* A has linearly independent *COLUMNS* in Matrics.

symmetric

antisymmetric

singular

Question # 3

If the columns of a matrix are _____ then the matrix is invertible.

Select correct option:

linearly independent (A) is *INVERTIBLE IF* A has linearly independent *COLUMNS* in Matrics.

linearly dependent

Question # 4

An n x n matrix A is _____ if and only if A has n linearly independent vectors.

Select correct option:

diagonalizable

singular not sure

symmetric

scalar

Question # 7

Two vectors are _____if at least one of the vector is a multiple of the other

Select correct option:

linearly independent Page no 89

linearly dependent

Question # 8

An n x n matrix with n distinct eigen values is diagonalizable.

Select correct option:

TRUE Page no 402

FALSE

Question # 9

2x – 3y = –2 4x + y = 24 The above system has a _____ solution.

Select correct option:

inconsistant

many

unique

trivial

Question # 1

Two vectors u and v are orthogonal to each other if _____.

Select correct option:

u . v = 0

u . v = 1

u + v = 0

u - v = 0

Question # 2

If the columns of a matrix are linearly independent then the matrix is _____.

invertible (A) is *INVERTIBLE IF* A has linearly independent *COLUMNS* in Matrics.

symmetric

antisymmetric

singular

Question # 3

If the columns of a matrix are _____ then the matrix is invertible.

linearly independent (A) is *INVERTIBLE IF* A has linearly independent *COLUMNS* in Matrics.

linearly dependent

Question # 4

An n x n matrix A is _____ if and only if A has n linearly independent vectors.

diagonalizable

singular not sure

symmetric

scalar

Question # 7

Two vectors are _____if at least one of the vector is a multiple of the other

linearly independent Page no 89

linearly dependent

Question # 8

An n x n matrix with n distinct eigen values is diagonalizable.

Select correct option:

TRUE **Page no 402**

FALSE

Question # 9

2x – 3y = –2 4x + y = 24 The above system has a _____ solution.

inconsistant

many

unique

trivial

Question # 10

An n x n matrix A is ___ if and only if 0 is not an eigen value of

invertible **In invertible Matrix Theorem.. The n × n matrix A is invertible** ***if and only if 0 is not*** **an** ***eigenvalue of A***

singular

symmetric

scalar

If for a linear transformation the equation T(x) =0 has only the trivial solution then T is

- **One-to-one**
- Onto

Let $\begin{bmatrix} a & b \\ c & d \end{bmatrix}$ and let k be a scalar .A formula that relates det kA to k and det A is

- det kA= k det A
- det kA = det (k+A)
- **det k A = k^2 det A**
- det A = k.det A

The equation x = p + t v describes a line

- through v parallel to p
- **through p parallel to v**
- through origin parallel to p

Every linear transformation is a matrix transformation

- True
- False

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