

MTH603-Numerical Analysis

SOLVED QUIZ 1

Solved by JUNAID MALIK



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All are VERIFIED

1: Which of the following is a two method?

- Newton-Raphson method
- Secant method
- Muller method
- Method of iteration

2: The difference between the rounded – off amount and the actual value is called

- Estimated value
- Inherent value
- Rounded off value
- Rounding error

3: If one root of the equation is $-3-7i$, than the other root will be

- $-3-7i$
- $3-7i$
- $-3+7i$
- $3+7i$

4: The number system that has base 2 is called -----system

- Binary

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- Octal
- Decimal
- Hexadecimal

5: Cholesky's reduction method is called

- Bisection method
- Regula-Falsi method
- Muller method
- Crout's method

6: The number system that is used in our daily life is called----- system

- Hexadecimal
- Binary
- Octal
- Decimal

7: Numerical methods for finding the solution of the system of equations are classified as

Direct and -----methods.

- Indirect
- Iterative
- Jacobi
- None of the given choice

8: In full pivoting we interchange rows and columns such that the ----

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--element in the matrix

Of the variables also get changed

- Smallest
- Middle
- Largest
- None of the given choice

9: If the determinant of a matrix A is not equal to zero than the system of equations will have-----

- a unique solutions
- many solutions
- infinite many solutions
- none of the given choice

10: In -----method, a system is reduced to an equivalent diagonal from using elementary transformation.

- Jacoboi's
- Gauss-Seidel
- Relaxation
- Gaussian elimination

11: The number system that has a base 16 is called-----system.

- Hexadecimal

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- Binary
- Octal
- Decimal

12: $3x^4 - 2x^2 - 24 = 0$ has at least -----real root(s)?

- 1
- 3
- 2
- 4

13: Which of the following is a two-points method?

- Muller's method
- Secant method
- Newton-Raphson method
- Regula-Falsi method

14: The number system that has a base 16 is called-----system.

- Hexadecimal
- Binary
- Octal
- Decimal

15: The statement 7265 instead of 7269 lies in the category of:

- Local truncation error
- Error of sum

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- Local round off error
- Inherent error

16: $3x^4 - 2x^2 - 24 = 0$ has at least -----real root(s)?

- 1
- 3
- 2
- 4

17: The number system that has a base 2 is called-----system.

- Hexadecimal
- Binary
- Octal
- Decimal

18: There are -----type of error.

- 3
- 5
- 4
- 2

19: $3x^4 - 2x^2 - 24 = 0$ has at least -----complex root(s)?

- 3
- 1
- 4

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• 2

20: The third row of the augmented matrix of the system of linear equation is:

$$2x+z=4$$

$$x-y+z=-3$$

$$-y+z=-5$$

- 1, -1 0 and -5

- 0, -1, 1 and -5

- 1, 1, 0 and 5

- 0, 1, 3 and -5

21: If one root of the equation is $-3-7i$ then the other root will be

- $-3-7i$

- $-3+7i$

- $3-7i$

- $3+7i$

22: The first row of the augmented matrix of the system of linear equation is:

$$2x+z=4$$

$$x-y+z=-3$$

$$-y+z=-5$$

- 0, 2, 1 and 4

- 2, 0, 1 and -4

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- 2,0, 1 and 4

- 1,0, 0 and 4

23: The third row of the augmented matrix of the system of linear equation is:

$$2x+z=4$$

$$x-y+z=-3$$

$$-y+z=-5$$

- 1,-1 0 and -5

- 0,-1,1 and -5

- 1,1, 0 and 5

- 0, 1, 3 and -5

24: There are -----type of error.

- 3

- 5

- 4

- 2

25: A series $16 + 8 + 4 + 2 + 1$ is replaced by the series $16 + 8 + 4 + 2$ than it is called

- Local Truncation error

- Local round off error

- Typing error

26: Non-convergence in Newton-Raphson method can occur if the

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initial value is selected

Such that the derivative of the function equal to

- Infinty
- One
- Zero
- Negative infinity

27: Which method requires three starting points?

- Bisection method
- Secant method
- Newton-Rophson method
- Muller method

28: Which of the following is a two-points method?

- Bisection method
- Secant method
- Newton-Rophson method
- Muller method

29: For s system of linear equation, the cross ponding coefficient matrix has the value

Of determinant ; $|A| = -3$,

Then which of the following is true?

- The system has unique solution

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- The system has finite multiple solution
- The system has infinite may solution
- The system has no solution

30: If the pivot element happens to be zero, than the i-th column elements are searched for

The numerically -----element.

- Smallest
- Largest

31: Which method require a derivative of the solution?

- Muller's method
- Secont method
- Newton-Ropnson method
- Regula-Falsi method

32: If the order of coefficient matrix corresponding to system of linear equation is 3×3 then which of the following will be the orders of its decomposed matrices; 'L' and 'U'?

- Order of 'L' = 3×1 , order of 'U' = 1×3
- Order of 'L' = 3×2 , order of 'U' = 2×3
- Order of 'L' = 3×3 , order of 'U' = 3×3
- Order of 'L' = 3×4 , order of 'U' = 4×3

33: While solving a system of linear equation by Gauss Jordon Method, in which of the following case the partial pivoting is essential?

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- When the upper triangular entries are zero
- When the lower triangular entries are zero
- When the diagonal entries are zero
- When pivots are zero

34: Under elimination methods, we consider, Gaussian elimination and -----methods.

- Gauss-Seidel
- Jacobi
- Gauss-Jordon elimination
- None of the given choice

35: The number system that has a base 8 is called-----system.

- Hexadecimal
- Binary
- Octal
- Decimal

36: The root of the equation $xe^x - 5 = 0$ is bounded in the interval.

- $[-2, 1]$
- $[-1, 1]$
- $[0, 1]$
- $[1, 2]$

37: Back substitution procedure is used in

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- Jacoboi's Method
- Gauss-Seidel Mehod
- Gaussian elimination Method
- None of the given choice

38: If there are three equation in two variables, then which of the following is true?

- System may have unique solution
- System may have multiple numbers of finite solution
- System may have infinite many solution
- All the above possibilities exit depends on the coefficient of variables

39: Numerical methods for finding the solution of the system of equations are classified as

Direct and -----methods.

- Indirect
- Iterative
- Jacobi
- None of the given choice

40: The Gaussian elimination method fails if any one of the pivot elements becomes -----

- One
- Zero

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41: Which of the following is a reason due to which LU decomposition of the system of linear

Equations; $x+y = 1$, $x+y = 2$ is not possible?

- Associated coefficient matrix is singular
- All the values of l's and u's can't be evaluated
- Determinant of coefficient matrix is zero
- All are equivalent

42: The number of significant digits in the number 608.030060 is

- 6
- 7
- 8
- 9

43: The linear equation $2x + 0y - 2 = 0$ has -----solution(s).

- Unique
- No solution
- Infinite
- Finite

44: The first root of a quadratic equation is $-\sqrt{3} - \sqrt{11}i$, then the root will be

- $-\sqrt{3} - \sqrt{11}i$
- $\sqrt{3} - \sqrt{11}i$

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- $-\sqrt{3} + \sqrt{11}i$

- $\sqrt{3} + \sqrt{11}i$

45: The Guss-Sedial method is applicable to strictly diagonally dominant or symmetric ——— definite matrices A.

- Positive

- negative

46: For two matrices A and B , such that "A = Inverse of B" , then which of the following is true?

- B = Inverse of A
- A and B are non-singular
- AB = Identify Matrix

- All choice are true

47: Which of the following is the meaning of the partial pivoting while employing the row transformation?

- Making the largest element as pivot
- Making the smallest element as pivot
- Making any element as pivot
- Making zero element as pivot

48: The basic idea of relaxation method is to reduce the largest residual to——

- One
- Two
- Zero
- None of the given choice

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49: How many Eigen vector will exist corresponding to the function ; $\text{Exp}(ax) = e^{ax}$, when the matrix operator is of differentiation?

- Infinite many
- Unique
- Finite Multiple
- None

50: The Jacobi's method of solving a matrix equation on a matrix that has no zeros along its——

- Main diagonal
- Last diagonal
- Last row
- First row

51: While using the relaxation method for finding the solution of the following system

$$5x_1 + x_2 - 3x_3 = 5$$

$x_1 + 5x_2 + 2x_3 = 7$ with the initial vector $(0,0,0)$, the residual would be

- $R_1 = 2, R_2 = 1, R_3 = 1$
- $R_1 = 1, R_2 = 3, R_3 = 2$
- $R_1 = 5, R_2 = 7, R_3 = 3$
- $R_1 = 3, R_2 = 2, R_3 = 1$

52: In the context of Jacobi's method for finding Eigen values and Eigen vectors of real symmetric matrix of order 2×2 , if $|-5|$ be its largest off-diagonal then which of the following will be its corresponding off-diagonal values of Orthogonal Matrix?

- $\cos(\theta), -\cos(\theta)$
- $\sin(\theta), \cos(\theta)$
- $\sin(\theta), -\sin(\theta)$

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- $-\sin(\theta), \cos(\theta)$

53: Let A be an $n \times n$ matrix. The number x is an eigenvalue of A if there exists a non-zero vector v such that ———

- $Av = xv$

- $Ax = xv$
- $Av + xv = 0$
- $Av = Ax$

54: The Jacobi's method is a method of solving a matrix that has — zeros along its main diagonal.

- No

- Atleast one

55: If the product of two matrices is an identity matrix that is $AB = I$, then which of the following is true?

- A is transpose of B
- A is inverse of B
- A is singular
- B is singular

56: In Jacobi's method after finding D_1 , the sum of the diagonal element of D_1 should be — to the sum of the diagonal elements of the original matrix A .

- Greater than
- Less than
- Same
- Different

57: While using Relaxation method, which of the following is the Residuals for 1st iteration on the system; $2x + 3y = 1, 3x + 2y = 4$?

- (2,3)

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- (3,-2)
- (-2,3)
- (1,4)

58: Let $[A]$ be a 3×3 real symmetric matrix with $|a_{12}|$ be the numerically largest off-diagonal element using Jacobi's method the value of θ can be found by

- $\tan 2\theta = \frac{2a_{23}}{a_{33} - a_{22}}$

- $\tan 2\theta = \frac{2a_{23}}{a_{22} - a_{33}}$

- $\tan 2\theta = \frac{2a_{12}}{a_{11} - a_{22}}$

- $\tan 2\theta = \frac{2a_{13}}{a_{11} - a_{33}}$

59: While using Relaxation method, which of the following is the largest Residual for 1st iteration on the system;

$$2x + 3y = 1, 3x + 2y = 4?$$

- -4
- 3
- 2
- 1

60: Eigenvalues of a -----matrix are all real.

- Symmetric
- Antisymmetric
- Rectangular
- Triangular

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61: How many Eigen vectors will exist corresponding to the function ;

$\text{Exp}(ax) = e^ax$, when the matrix operator is of differentiation?

- Infintie many

- Unique
- Finite multiple
- None
-

62: If $n \times n$ matrices A and B are similer, then thay have the same eigenvalues

(with the same multiplicities).

- True

- False

63: While using the relaxation method for finding the solution of the below given system, which of the following increment will be introduced?

- $\Delta x_1 = \frac{R_1}{a_{22}}$

- $\Delta x_1 = \frac{R_1}{a_{11}}$

- $\Delta x_2 = \frac{R_2}{a_{22}}$

- $\Delta x_3 = \frac{R_3}{a_{33}}$

64: Relaxation method is a/an-----

- Direct method
- Iterative method

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65: Which of the following is equivalent from the system of equation in matrix form; $AX = B$?

- $XA = B$
- $X = B(\text{Inverse of } A)$
- $X = (\text{Inverse of } A)B$
- $BX = A$

66: Gauss elimination and Gauss-Jordan methods are popular among many methods for finding the —— of a matrix.

- Identify
- Transpose
- Inverse
- None of the given

67: Let $[A]$ be a 3×3 real symmetric matrix with

$$|a_{12}|$$

Be numerically the largest off-diagonal element of A , then we can construct orthogonal matrix S_1 by Jacobi's method as

- $$\begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos \theta & -\sin \theta \\ 0 & \sin \theta & \cos \theta \end{pmatrix}$$

- $$\begin{pmatrix} \cos \theta & 0 & -\sin \theta \\ 0 & 1 & 0 \\ \sin \theta & 0 & \cos \theta \end{pmatrix}$$

- $$\begin{pmatrix} 1 & 0 & 0 \\ 0 & \cos \theta & -\sin \theta \\ 0 & \sin \theta & \cos \theta \end{pmatrix}$$

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- $$\begin{pmatrix} \cos \theta & -\sin \theta & 0 \\ \sin \theta & \cos \theta & 0 \\ 0 & 0 & 1 \end{pmatrix}$$

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