Mth603- First Quizzes (11-11-2011)

QUIZ.NO.1(1)

Question # 1 of 10 (Total Marks: 1)
While solving a system of linear equations, which of the following approach is economical for the computer memory?
Select correct option:

Direct
Iterative   (Page 69)
Analytical
Graphical

Question # 2 of 10 (Total Marks: 1)
The basic idea of relaxation method is to reduce the largest residual to ………….
Select correct option:

One
Two
Zero   (Page 83)
None of the given choices

Question # 3 of 10 (Total Marks: 1)
The Jacobi's method is a method of solving a matrix equation on a matrix that has no zeros along its
_____.
Select correct option:
main diagonal   (Page 104)
last column
last row
first row

Question # 4 of 10 (Total Marks: 1)
If A is a nxn triangular matrix (upper triangular, lower triangular) or diagonal matrix ,
the eigenvalues of A are the diagonal entries of A.
Select correct option:
TRUE   Click here for detail
FALSE

Question # 5 of 10 (Total Marks: 1)

A 3 x 3 identity matrix have three and different eigen values.
Select correct option:
TRUE   Click here for detail
FALSE

Question # 6 of 10 (Total Marks: 1)
Which of the following is a reason due to which the LU decomposition of the system of linear equations;
x+y = 1, x+y =2 is not possible?
Select correct option:
       Associated coefficient matrix is singular
       All values of l's and u's can't be evaluated
       Determinant of coefficient matrix is zero
       All are equivalent

Question # 7 of 10 (Total Marks: 1)
Gauss - Jordan Method is similar to ……….
Select correct option:
       Gauss–Seidel method
       Iteration's method
       Relaxation Method
       Gaussian elimination method   (Page 95)

Question # 8 of 10 (Total Marks: 1)
While using Relaxation method, which of the following is the largest Residual for 1st iteration on the
system; 2x+3y = 1, 3x +2y = - 4 ?
Select correct option:
      -4
      3
      2
      1

Question # 9 of 10 (Total Marks: 1)
Gauss–Seidel method is also known as method of …………….
Select correct option:
       Successive displacement   (Page 263)
       Iterations
       False position
       None of the given choices

Question # 10 of 10 (Total Marks: 1)
Jacobi's Method is a/an………………
Select correct option:
       Iterative method   (Page 69)
       Direct method

QUIZ.NO.1(2)

Question # 1 of 10 (Total Marks: 1)
The characteristics polynomial of a 3x 3 identity matrix is _____, if x is the eigen values of the given 3 x 3 identity matrix. where symbol ^ shows power.
Select correct option:
$(x-1)^3$
$(x+1)^3$
x^3-1
x^3+1

Question # 2 of 10 (Total Marks: 1)
The can be used only to find the eigenvalue of A that is largest in absolute value—we call this eigenvalue the dominant eigenvalue of A.
Select correct option:
TRUE
FALSE

Question # 3 of 10 (Total Marks: 1)
In …………… method, a system is reduced to an equivalent diagonal form using elementary transformations.
Select correct option:
      Jacobi's
      Gauss-Seidel
      Relaxation
      Gaussian elimination   (Page 262)

Question # 4 of 10 (Total Marks: 1)
The linear equation: 2x+0y-2=0 has -------- solution/solutions.
Select correct option:

Unique   (Page 48)
  no solution
  infinite many
  finite many

Question # 5 of 10 (Total Marks: 1)
Under elimination methods, we consider, Gaussian elimination and ……………methods.
Select correct option:

 Gauss-Seidel
 Jacobi
 Gauss-Jordan elimination   (Page 48)
 None of the given choices

Question # 6 of 10 (Total Marks: 1)
Which of the following method is not an iterative method?

Select correct option:

 Jacobi's method
 Gauss-Seidel method
 Relaxation methods
 Gauss-Jordan elimination method

Question # 7 of 10 (Total Marks: 1)
An eigenvector V is said to be normalized if the coordinate of largest magnitude is equal to zero.
Select correct option:
TRUE
FALSE   (Page 97)

Question # 8 of 10 (Total Marks: 1)
Exact solution of 2/3 is not exists.
Select correct option:
TRUE
FALSE

Question # 9 of 10 (Total Marks: 1)
When the condition of diagonal dominance becomes true in Jacobi's Method.Then its means that the method is …………….
Select correct option:

 Stable
 Unstable
 Convergent   (Page 70)
 Divergent

Question # 10 of 10 (Total Marks: 1)
Gauss–Seidel method is similar to ……….
Select correct option:

 Iteration's method
 Regula-Falsi method
 Jacobi's method
 None of the given choices   (Page 263)

QUIZ.NO.1(3)

Question # 1 of 10 (Total Marks: 1)
Sparse matrices arise in computing the numerical solution of …………….
Select correct option:

 Ordinary differential equations
 Partial differential equations   (Page 69)
 Linear differential equations
 Non-linear differential equations

Question # 2 of 10 (Total Marks: 1)
While solving by Gauss-Seidel method, which of the following is the first Iterative solution for the system; x-2y =1, x+4y=4 ?
Select correct option:

(1, 0.75)
(0,0)
(1,0)
(0,1)

Question # 3 of 10 (Total Marks: 1)
While solving a system of linear equations by Gauss Jordon Method, after all the elementary row operations if there lefts also zeros on the main diagonal then which of the is true about the system?
Select correct option:

System may have unique solutions
System has no solution
System may have multiple numbers of finite solutions
System may have infinite many solutions

Question # 4 of 10 (Total Marks: 1)
Numerical methods for finding the solution of the system of equations are classified as direct and ………… methods
Select correct option:

Indirect
Iterative   (Page 48)
Jacobi
None of the given choices

Question # 5 of 10 (Total Marks: 1)
If the Relaxation method is applied on the system; 2x+3y = 1, 3x +2y = - 4, then largest residual in 1st iteration will reduce to -------.
Select correct option:
zero
4
-1
-1

Question # 6 of 10 (Total Marks: 1)
While using Relaxation method, which of the following is the Residuals for 1st iteration on the system; 2x+3y = 1, 3x +2y =4 ?
Select correct option:
(2,3)
(3,-2)
(-2,3)
(1,4)

0= 1-2x-3y
0= 4-3x -2y

Question # 7 of 10 (Total Marks: 1)
If the order of coefficient matrix corresponding to system of linear equations is 3*3 then which of the following will be the orders of its decomposed matrices; 'L' and 'U'?
Select correct option:
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

Question # 8 of 10 (Total Marks: 1)
While solving the system; x–2y = 1, x+4y = 4 by Gauss-Seidel method, which of the following ordering is feasible to have good approximate solution?
Select correct option:
x+4y = 1, x-2y = 4
x+2y = 1, x- 4y =4
x+4y = 4, x–2y = 1
no need to reordering

Question # 9 of 10 (Total Marks: 1)
Full pivoting, in fact, is more ……………than the partial pivoting.
Select correct option:

Easiest
Complicated   (Page 51)

Question # 10 of 10 (Total Marks: 1)
For the equation $x^3 + 3x - 1 = 0$, the root of the equation lies in the interval......

► (1, 3)
► (1, 2)
► **(0, 1)**
► (1, 2)

QUIZ.NO.1(4)

Question # 1 of 10 (Total Marks: 1)
............lies in the category of iterative method.

► Bisection Method
► Regula Falsi Method
► Secant Method
► **all of the given choices   (Page 8)**

Question # 2 of 10 (Total Marks: 1)
If n x n matrices A and B are similar, then they have the different eigenvalues (with the same multiplicities).
1. True
False

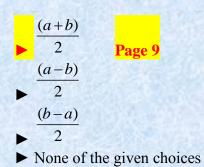**Question # 3 of 10 (Total Marks: 1)**
The Jacobi's method is a method of solving a matrix equation on a matrix that has _____zeros along its main diagonal.
No   Click here for detail
1. At least one

Question # 4 of 10 (Total Marks: 1)
If the root of the given equation lies between a and b, then the first approximation to the root of the equation by bisection method is ……

► $\dfrac{(a+b)}{2}$ **Page 9**

► $\dfrac{(a-b)}{2}$

► $\dfrac{(b-a)}{2}$

► None of the given choices

Question # 5 of 10 (Total Marks: 1)
To apply Simpson's 3/8 rule, the number of intervals in the following must be

► 10
► 11
► **12**
► 13

Question # 6 of 10 (Total Marks: 1)
The Gauss-Seidel method is applicable to strictly diagonally dominant or symmetric_____ definite matrices A.
Select correct option:
Positive Click here for detail
negative

Question # 7 of 10 (Total Marks: 1)
Differences methods find the _____ solution of the system.
Select correct option:
numerical
Analytical

Question # 8 of 10 (Total Marks: 1)
To apply Simpson's 1/3 rule, the number of intervals in the following must be

► 2   (Simpson''s 1/3 rule must use an even number of elements')
► 3
► 5
► 7

Question # 9 of 10 (Total Marks: 1)
Bisection and false position methods are also known as bracketing method and are always
Divergent
Convergent   (Page 26)
.67

Question # 10 of 10 (Total Marks: 1)
The Inverse of a matrix can only be found if the matrix is
Singular
None Singular: Every square non-singular matrix will have an inverse.
Scalar
Diagonal

QUIZ.NO.1(5)

Question # 1 of 10 (Total Marks: 1)
In interpolation is used to represent the δ
Forward difference Δ
Central difference   (Page 117)
Backward difference

Question # 2 of 10 (Total Marks: 1)
The base of the decimal system is _____
10
0
2
8
None of the above.

Question # 3 of 10 (Total Marks: 1)
Bisection method is ……………….. method
► Open Method
► Bracketing Method   (page 26)

Question # 4 of 10 (Total Marks: 1)
A 3 x 3 identity matrix have three and _____eigen values.
same

different

Question # 5 of 10 (Total Marks: 1)

Eigenvalues of a symmetric matrix are all _____ .

<mark>Real   (page 104)</mark>

complex

zero

positive

Question # 6 of 10 (Total Marks: 1)

The Jacobi iteration converges, if A is strictly diagonally dominant.

<mark>TRUE   (Page 69)</mark>

FALSE

Question # 7 of 10 (Total Marks: 1)

Below are all the finite difference methods EXCEPT _____.

jacobi's method

<mark>newton's backward difference method</mark>

Stirlling formula

Forward difference method

Question # 8 of 10 (Total Marks: 1)

Two matrices with the same characteristic polynomial need not be similar.

<mark>TRUE</mark>

FALSE

Page

Question # 9 of 10 (Total Marks: 1) No.69

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

True

False

Question # 10 of 10 (Total Marks: 1)

The Gauss-Seidel method is applicable to strictly diagonally dominant or symmetric positive definite matrices A.

True

False

QUIZ.NO.1(6)

Question # 1 of 10 (Total Marks: 1)

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

Page No.70

Diagonal

1. Upper triangular
2. Lower triangular
3. Scalar

Question # 2 of 10 (Total Marks: 1)

For differences methods we require the set of values.
True
 False

Question # 3 of 10 (Total Marks: 1)
 If x is an eigen value corresponding to eigen value of V of a matrix A. If a is any constant, then x – a is an eigen value corresponding to eigen vector V is an of the matrix A - a I.
True
 False

Question # 4 of 10 (Total Marks: 1)
 Central difference method seems to be giving a better approximation, however it requires more computations.
Page No.71
 True
False

Question # 5 of 10 (Total Marks: 1)
 Iterative algorithms can be more rapid than direct methods.
True
False

Question # 6 of 10 (Total Marks: 1)
 Central Difference method is the finite difference method.
True
 False

Question # 1 of 10 (Total Marks: 1)
 Back substitution procedure is used in **…………….**
Select correct option:
Gaussian Elimination Method
Jacobi's method
Gauss-Seidel method
None of the given choices

Question # 7 of 10 (Total Marks: 1)
 The Jacobi's method is a method of solving a matrix equation on a matrix that has no zeros along its main diagonal.

True
False

Question # 8 of 10 (Total Marks: 1)
 Power method is applicable if the eigen vectors corresponding to eigen values are linearly independent.

True (Page 102)
False

Question # 9 of 10 (Total Marks: 1)
  Power method is applicable if the eigen values are _____.

<mark>real and distinct   (Page 102)</mark>
real and equal
 positive and distinct
negative and distinct

Question # 10 of 10 (Total Marks: 1)
  Simpson's rule is a numerical method that approximates the value of a definite integral by using polynomials.

<mark>Quadratic   (Page 174)</mark>
Linear
Cubic
Quartic

QUIZ.NO.1(7)

Question # 1 of 10 (Total Marks: 1)
  .In Simpson's Rule, we use parabolas to approximating each part of the curve. This proves to be very efficient as compared to Trapezoidal rule.
<mark>True   Click here for detail</mark>
False

Question # 2 of 10 (Total Marks: 1)
  The predictor-corrector method an implicit method. (multi-step methods)
<mark>True   (Page 212)</mark>
False

Question # 3 of 10 (Total Marks: 1)
  Generally, Adams methods are superior if output at many points is needed.
<mark>True</mark>
False

Question # 4 of 10 (Total Marks: 1)
  The Trapezoidal rule is a numerical method that approximates the value of a._____.
Indefinite integral
<mark>Definite integral   (Page 176)</mark>
Improper integral
Function

Question # 5 of 10 (Total Marks: 1)
  The need of numerical integration arises for evaluating the definite integral of a function that has no explicit _____ or whose anti derivative is not easy to obtain.

<mark>Anti deri vat ive</mark>
Derivatives.

Question # 6 of 10 (Total Marks: 1)
An indefinite integral may _____ in the sense that the limit defining it may not exist.
diverge
Converge

Question # 7 of 10 (Total Marks: 1)
An improper integral is the limit of a definite integral as an endpoint of the interval of integration approaches either a specified real number or ∞ or $-\infty$ or, in some cases, as both endpoints approach limits.
TRUE   Click here for detail
FALSE

Question # 8 of 10 (Total Marks: 1)
Euler's Method numerically computes the approximate derivative of a function.
TRUE
FALSE

Question # 9 of 10 (Total Marks: 1)
Euler's Method numerically computes the approximate _____ of a function.
Antiderivative
Derivative
Error
Value

Question # 10 of 10 (Total Marks: 1)
If we wanted to find the value of a definite integral with an infinite limit, we can instead replace the infinite limit with a variable, and then take the limit as this variable goes to _____.
Chose the correct option :
Constant
Finite
Infinity   Click here for detail
Zero

QUIZ.NO.1(8)

Question # 1 of 10 (Total Marks: 1)
The Jacobi iteration _____, if A is strictly diagonally dominant.
converges
Diverges

Question # 2 of 10 (Total Marks: 1)
By using determinants, we can easily check that the solution of the given system of linear equation exits and it is unique.
TRUE
FALSE

Question # 3 of 10 (Total Marks: 1)
The absolute value of a determinant (|detA|) is the product of the absolute values of the eigenvalues of

matrix A

TRUE
FALSE

Question # 4 of 10 (Total Marks: 1)
Eigenvectors of a symmetric matrix are orthogonal, but only for distinct eigenvalues.
TRUE
FALSE

Question # 5 of 10 (Total Marks: 1)
Let A be an n ×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 = Ax1
Av = λv

Question # 6 of 10 (Total Marks: 1)
In Jacobi's Method, the rate of convergence is quite _____ compared with other methods.
Slow   Click here for detail
Fast

Question # 7 of 10 (Total Marks: 1)
Numerical solution of 2/3 up to four decimal places is _____.
0.667
0.6666
0.6667
0.666671.

Question # 8 of 10 (Total Marks: 1)
Symbol used for forward differences is
Δ   (Page 12)
δ
μ

Question # 9 of 10 (Total Marks: 1)
The relationship between central difference operator and the shift operator is given by
δ =E−E-1
δ = E+E-1
δ = E1/2+E1/2
δ = E1/2 −E1/2

$\delta = E^{\frac{1}{2}} - E^{-\frac{1}{2}}$ (Page 152)

Question # 10 of 10 (Total Marks: 1)

Muller's method requires --------starting points

1
2
<mark>3   (Page 41)</mark>

QUIZ.NO.1(9)

Question # 1 of 10 (Total Marks: 1)
By using determinants, we can easily check that the solution of the given system of linear equation _____ and it is _____.

Select correct option:
<mark>exits, unique</mark>
exists, consistent
trivial, unique
nontrivial, inconsistent

Question # 2 of 10 (Total Marks: 1)
Two matrices with the _____ characteristic polynomial need not be similar.
Select correct option:
<mark>same</mark>
different

Question # 3 of 10 (Total Marks: 1)
In ……………… method, the elements above and below the diagonal are simultaneously made zero.

Select correct option:
Jacobi's
Gauss-Seidel
<mark>Gauss–Jordon Elimination</mark>   (Page 59)
Relaxation

Question # 4 of 10 (Total Marks: 1)
Which of the following is equivalent form of the system of equations in matrix form; AX=B ?

Select correct option:
XA = B
<mark>X = B(Inverse of A)</mark>
X =(Inverse of A)B
BX = A

Question # 5 of 10 (Total Marks: 1)
If the determinant of a matrix A is not equal to zero then the system of equations will have……….
Select correct option:
<mark>a unique solution</mark>
many solutions
infinite many solutions

None of the given choices

Question # 6 of 10 (Total Marks: 1)
Sparse matrix is a matrix with ……….
Select correct option:
Some elements are zero
Many elements are zero (page 69)
Some elements are one
Many elements are one

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QUIZ.NO.2(1)

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Question # 1 of 10 (Start time: 11:18:07 PM) Total Marks: 1
How many Eigen vectors will exist corresponding to the function; Exp(ax) = e^ax, when the matrix operator is of differentiation?

Select correct option:
Infinite many
Finite Multiple
None

Question # 2 of 10 (Start time: 11:19:00 PM) Total Marks: 1
Which of the following rearrangement make strictly diagonal dominant, the system of linear equations; x-3y+z= –2, –6x+4y+11z=1, 5x–2y–2z=9?

Select correct option:
5x–2y–2z=9, x–3y+z= –2, –6x+4y+11z=1
–6x+4y+11z=1, x–3y+z= –2, 5x–2y–2z=9
5x–2y–2z=9, –6x+4y+11z=1, x–3y+z= –2
No need to rearrange as system is already in diagonal dominant form.

Question # 3 of 10 (Start time: 11:22:12 PM) Total Marks: 1
Which of the following is the meaning of partial pivoting while employing the row transformations?
Select correct option:
Making the largest element as pivot (Page 50)
Making the smallest element as pivot
Making any element as pivot
Making zero elements as pivot

Question # 4 of 10 (Start time: 11:53:06 PM) Total Marks: 1
Differences methods are iterative methods.
Select correct option:
TRUE
FALSE

Question # 5 of 10 (Start time: 11:55:28 PM) Total Marks: 1
Eigenvalues of a _____ matrix are all real.
Select correct option:
symmetric
antisymmetric
rectangular
triangular

Question # 6 of 10 (Start time: 11:32:38 PM) Total Marks: 1
If a system of equations has a property that each of the equation possesses one large coefficient and the larger coefficients in the equations correspond to different unknowns in different equations, then which of the following iterative method id preferred to apply?

Select correct option:
Gauss-Seidel method
Gauss-Jordon method
Gauss elimination method
Crout's method

Question # 7 of 10 (Start time: 11:35:30 PM) Total Marks: 1
For a system of linear equations, the corresponding coefficient matrix has the value of determinant; |A| = 0, then which of the following is true?

Select correct option:
The system has unique solution
The system has finite multiple solutions
The system has infinite may solutions
The system has no solution   (Page 48)

Question # 8 of 10 (Start time: 11:36:21 PM) Total Marks: 1
For the system; 2x+3y = 1, 3x +2y = - 4, if the iterative solution is (0,0) and 'dxi = 2' is the increment in 'y' then which of the following will be taken as next iterative solution?

Select correct option:
(2,0)
(0,3)
(0,2)
(1,-4)

Question # 9 of 10 (Start time: 11:37:49 PM) Total Marks: 1
While using Relaxation method, which of the following is increment 'dxi'corresponding to the largest Residual for 1st iteration on the system; 2x+3y = 1, 3x +2y = - 4 ?

Select correct option:
-2
2
3
4

Question # 10 of 10 (Start time: 11:40:42 PM)Total Marks: 1
If system of equations is inconsistent then its means that it has ………

Select correct option:
<mark>No Solutions</mark>
Many solutions
Infinite Many solutions
None of the given choices

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QUIZ.NO.2(2)

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Question # 1 of 10 (Start time: 11:47:15 PM)Total Marks: 1
Relaxation Method is a/an ……….

Select correct option:
Direct method
<mark>Iterative method</mark>

Question # 2 of 10 (Start time: 11:33:36 PM) Total Marks: 1
How many Eigen values will exist corresponding to the function; Exp(ax) = e^ax, when the matrix operator is of differentiation?

Select correct option:
Finite Multiple
Infinite many
Unique
None

Question # 3 of 10 (Start time: 11:36:46 PM) Total Marks: 1
The eigenvectors of a square matrix are the non-zero vectors that, after being multiplied by the matrix, remain …………… to the original vector.

Select correct option:
Perpendicular
<mark>Parallel</mark>
Diagonal

None of the given choices

Question # 4 of 10 (Start time: 11:38:16 PM) Total Marks: 1
In Jacobi's method after finding D1, the sum of the diagonal elements of D1 should be ………… to the sum of the diagonal elements of the original matrix A.

Select correct option:
Greater than
Less than
Same   (Page 106)
Different

Question # 5 of 10 (Total Marks: 1)
In the context of Jacobi's method for finding Eigen values and Eigen vectors of a real symmetric matrix of order 2*2, if |-5| be its largest off-diagonal and its two equal diagonal values are '3' then which of the following will be its corresponding argument value 'theta' of Orthogonal Matrix?

Select correct option:
Pi/3
Pi/6
Pi/2
Pi/4

Question # 6 of 10 (Total Marks: 1)
If f (x) contains trigonometric, exponential or logarithmic functions then this equation is known as
Transcendental Equation   (Page 6)
Algebraic
 Polynomial
 Linear

Question # 7 of 10 (Total Marks: 1)
 In interpolation is used to represent the d
 Forward difference ?
Central difference
 Backward difference

Question # 8 of 10 (Total Marks: 1)
 The Power method can be used only to find the eigen value of A that is largest in absolute value we call this eigen value the dominant eigen value of A.
True
False

Question # 9 of 10 (Total Marks: 1)
Power method is applicable if the eigen vectors corresponding to eigen values are linearly ----.
Select correct option:
independent
dependent