



BRAINWARE UNIVERSITY
Term End Examination 2020 - 21
Programme – Bachelor of Computer Applications
Course Name – Numerical Method
Course Code - GEBS301

Semester / Year - Semester III

Time allotted : 75 Minutes

Full Marks : 60

[The figure in the margin indicates full marks. Candidates are required to give their answers in their own words as far as practicable.]

Group-A

(Multiple Choice Type Question)

1 x 60=60

1. (Answer any Sixty)

(i) The number of significant digits in the number 3.0056 is

- | | |
|------|------|
| a) 3 | b) 4 |
| c) 5 | d) 2 |

(ii) Round-off error is a form of

- | | |
|---------------------|--------------------|
| a) truncation error | b) numerical error |
| c) inherent error | d) none of these |

(iii)

After being rounding off to three places of decimal the number 57.1092 becomes

- | | |
|-----------|-----------|
| a) 57.109 | b) 57.100 |
| c) 57.110 | d) 0.109 |

(iv)

When 0.0081 is the approximate value of 0.00809, the error is

- | | |
|-------------|-------------------|
| a) 0.001 | b) 0.00001 |
| c) -0.00001 | d) None of these. |

(v)

The percentage error in approximating $4/3$ to 1.3333 is

- a) 0.0025%
- b) 25%
- c) 0.00025%
- d) 0.25%

(vi)

Round-off of the number 0.005723 up to three significant digits is

- a) 0.005
- b) 0.00572
- c) 0.006
- d) None of these.

(vii)

Round-off of the number 0.0456 up to five significant figures is

- a) 0.0456
- b) 0.04560
- c) 0.045600
- d) None of these.

(viii)

Round-off of the number 0.0000123 up to four decimal is

- a) 0.0001
- b) 0.0000
- c) 0.0002
- d) None of these.

(ix)

Round-off of the number 5.4555 up to four significant figures is

- a) 5.455
- b) 5.456
- c) 5.457
- d) None of these.

(x)

After rounding off to three places of decimals the number 15.23186 becomes

- a) 15.231
- c) 15.241

- b) 15.232
- d) 15.2

(xi)

After being rounded off to one place of decimal the number 35.956 becomes

- a) 36.0
- c) 35.9

- b) 36
- d) 35.0

(xii)

The accuracy attainable with Newton-Raphson method

- a) does not depend upon the value of the derivative of $f(x)$
- c) may depend upon the value of the derivative of $f(x)$

- b) depend upon the value of the derivative of $f(x)$
- d) none of these.

(xiii)

The rate of convergence of Bisection method is

- a) linear
- c) cubic

- b) quadratic
- d) None of these.

(xiv)

In Gaussian elimination method, the given system of equations represented by $AX=B$ is

converted to another system $UX=Y$ where U is

a)

diagonal matrix

c)

identity matrix

b)

null matrix

d)

upper triangular matrix.

(xv)

To solve the system of equations $AX=B$ by Gaussian elimination method, A is transformed to a

a)

lower triangular matrix

c)

diagonal matrix

b)

upper triangular matrix

d)

none of these.

(xvi)

The convergence condition for Gauss-Seidel iterative method for solving a system of linear equation is

a)

the co-efficient matrix is singular

c)

The coefficient matrix must be strictly diagonally dominant.

b)

the co-efficient matrix has rank zero

d)

None of these

(xvii)

If $f(x)$ is a continuous function and $f(a) \cdot f(b) < 0$, then

a)

there exists one root in (a, b)

c)

$f(x)$ has odd number of roots

b)

there lies odd number of real roots in (a, b)

d)

none of these.

(xviii)

Bisection method is

a)

conditionally and surely convergent

c)

conditionally convergent

b)

unconditionally and surely convergent

d)

none of these.

(xix)

Newton Raphson method is also known as

a)

normal method

c)

parallel method

b)

tangent method

d) $\langle p \text{ style="text-align: left;"} \rangle$ None of these.

(xx)

The iterative method is known as

a)

b)

direct method

indirect method

c) derivative method

d) none of these.

(xxi) In Gauss -Jordan method to solve $AX=B$, A is transformed in

a)

b)

singular matrix

non singular matrix

c) diagonal matrix

d) orthogonal matrix

(xxii)

A matrix A can be factorized into lower and upper triangular matrix if all the principal minors of A are

a) singular

b) Non singular

c) zero

d) None of these

(xxiii)

Backward substitution method is used to solve a system of equations by

a)

b) <p style="text-align: left;">Gauss-Jordan method

Gauss elimination method

c) Matrix factorization method

d) None of these.

(xxiv)

In Newton's forward interpolation, the interval should be

a)

equally spaced

c)

may be equally spaced

b)

not equally spaced

d) None of these

(xxv)

Geometrically the Lagrange's interpolation formula for two points of interpolation represents a

a)

circle

c)

ellipse

b)

straight line

d)

None of these.

(xxvi)

If $y=f(x)$ are known only at $(n+1)$ distinct interpolating points then the Lagrangian polynomial has degree

a)

at most n

c)

exactly n

b)

at least n

d)

exactly $n+1$

(xxvii)

For a given set of values of x and $f(x)$, the interpolation polynomial is

a)

unique

c)

has degree 4

b)

not unique

d)

none of these.

(xxviii)

The co-efficient of Newton's backward difference interpolation formula are

a)

c)

b)

<input type="image" src="/apttest/fck_image/68b.PNG" width="136" height="27" />

d) None of these.

(xxix)

Newton's backward interpolation formula is used to interpolate

a)

near end

c)

near the beginning

b)

near central position

d)

none of these.

(xxx)

a) `<input type="image" src="/apttest/fck_image/78a.PNG" width="80" height="15" />`

c) `<input type="image" src="/apttest/fck_image/78c.PNG" width="85" height="16" />`

b) `<input type="image" src="/apttest/fck_image/78b.PNG" width="76" height="15" />`

d) `<input type="image" src="/apttest/fck_image/78d.PNG" width="92" height="14" />`

(xxxii)

Which of the following is wrong?

a)

Divided difference is linear

c)

Divided differences are symmetric functions.

b)

For equispaced arguments, the divided difference can be expressed in terms of backward differences.

d)

Divided difference for equal argument is known as confluent divided differences.

(xxxiii) `<p style="text-align: left;"><input type="image" src="/apttest/fck_image/83(1).png" width="463" height="35" />`

a) `<input type="image" src="/apttest/fck_image/83a.PNG" width="85" height="15" />`

c) `<input type="image" src="/apttest/fck_image/83c.PNG" width="26" height="14" />`

b) `<input type="image" src="/apttest/fck_image/83b.PNG" width="21" height="20" />`

d)

none of these.

(xxxiiii) `<input type="image" src="/apttest/fck_image/84.PNG" width="518" height="35" />`

a) `<p style="text-align: left;"> 5/11`

b) 17/11

c) 5/12

d) 12/17

(xxxiv)

The technique for computing the value of the function inside the given argument is called

a)

b)

interpolation

extrapolation

c)

d)

partial fraction

inverse interpolation

(xxxv)

The Delta of power two is called the ____ order difference operator.

a) `<p style="text-align: left;"> First`

b) `<p style="text-align: left;"> Second`

c) `<p style="text-align: left;"> Third`

d) `<p style="text-align: left;"> Fourth`

(xxxvi) `<input type="image" src="/apttest/fck_image/89.PNG" width="129" height="16" />`

a) `<input type="image" src="/apttest/fck_image/89a.PNG" width="145" height="16" />`

b) `<input type="image" src="/apttest/fck_image/89b.PNG" width="141" height="16" />`

c) `<p style="text-align: left;"> <input type="image" src="/apttest/fck_image/89c.PNG" width="146" height="16" />`

d) `<p style="text-align: left;"> <input type="image" src="/apttest/fck_image/89d.PNG" width="144" height="16" />`

(xxxvii)

Simpson's one-third rule is applicable only if the number of sub-interval is....

- a) even
- b) odd
- c) either odd or even
- d) none of these.

(xxxviii)

The degree of precision of Trapezoidal rule is

- a) 1
- b) 2
- c) 3
- d) 5

(xxxix)

$E_f(x)$

- a) $f(x+h)$
- b) $f(x-h)$
- c) $f(x)-f(x-h)$
- d) $f(x)$

(xl)

- a) - b) - c) - d) None of these.

(xli)

Choose the wrong one?

- a) Trapezoidal formula be a one point
- b) Simpson's one-third formula be a two point


quadrature formula.

quadrature formula.

c)

d) None of these.

Simpson's three-eighth formula be a three point quadrature formula.

(xlii)  width="537" height="41" />

a) 2

b) 0.5

c) 1

d) 1.5

(xliii)

In Trapezoidal rule if the interval of integration $[a,b]$ is divided into n number of sub-interval then the relation between n and h is

a)

b)

$$b=a+(n-1)h$$

$$h=b-a$$

c)

d)

$$b=a+nh$$

exists no relation between n and h .

(xliv)

In Trapezoidal rule if the length of each sub-interval is 0.5, when the interval of integration is $[1,9]$, then number of sub-interval is

a) 8

b) 16

c) 18

d) 10

(xlv) `<input type="image" src="/apttest/fck_image/110.PNG" width="535" height="65" />`

- a) 0.0001
- b) 0.01
- c) 0
- d) None of these.

(xlvi) `<input type="image" src="/apttest/fck_image/112.PNG" width="542" height="55" />`

- a) 2
- b) b-a
- c) 0
- d) 1

(xlvii) `<input type="image" src="/apttest/fck_image/119.PNG" width="530" height="58" />`

- a) `<input type="image" src="/apttest/fck_image/119a.PNG" width="223" height="36" />`
- b) `<input type="image" src="/apttest/fck_image/119b.PNG" width="212" height="43" />`
- c) `<input type="image" src="/apttest/fck_image/119c.PNG" width="212" height="37" />`
- d) None of these.

(xlviii)

Runge-Kutta 4th order formula has a truncation, which is of the order

- a) `<input type="image" src="/apttest/fck_image/91(2).png" width="28" height="18" />`
- b) `<input type="image" src="/apttest/fck_image/91c(2).png" width="26" height="17" />`
- c) `<input type="image" src="/apttest/fck_image/92c(1).png" width="24" height="17" />`
- d) none of these.

(xlix)

Runge-Kutta method is used to solve

- a)
- b)

An algebraic equation

c)

A first order partial differential equation

A first order ordinary differential equation

d)

None of these.

(l)

Which of the following is a multistep method?

a)

Euler's method

c)

Taylor's series method

b)

Predictor-Corrector method

d) None of these.

(li)

The finite difference method is used to solve

a)

a boundary value problem

c)

a partial differential equation

b)

a system of ordinary differential equations

d)

a system of transcendental equation

(lii)

a)

c)

b)

d)

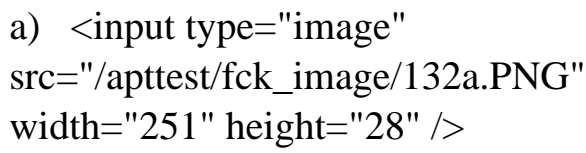
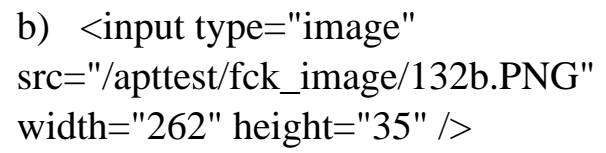
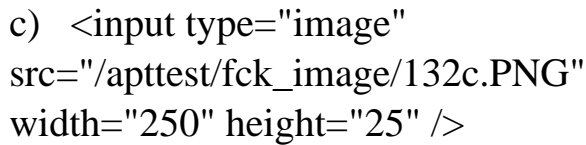
(lii)

The finite difference method is also known as

- a) net method.
- b) iterative method
- c) integration solving method
- d) none of these

(liv)

Milne's corrector formula of order 4 is

- a) 
- b) 
- c) 
- d) none of these.

(lv)

The predictor-corrector method is

- a) Euler's method
- b) 4-th order Runge-kutta method
- c) Taylor's series method
- d) Modified Euler's method

(lvi)

Euler method depends on

a) h

b)

initial value of x

c)

d) none of these.

initial value of y

(lvii)

Which of the following is Predictor –Corrector method?

a)

b)

Milne's method

Adams Bashforth method

c) Both Milne and Adams Bashforth method

d) None of these.

(lviii)

Modified Euler method has a truncation error of the order of

a) h

b)

c)

d)

(lix)

a) 2.22133

b) 2.21133

c) 2.22130

d) None of these.

(lx)

- a) 0.4133
- c) 0.5123

- b) 0.46333
- d) None of these.