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) <p style="text-align: left;"> 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
b) 15.232
c) 15.241
d) 15.2

(xi)

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

a) 36.0
b) 36
c) 35.9
d) 35.0

(xii)

The accuracy attainable with Newton-Raphson method

a) does not depend upon the value of the derivative of f(x)
b) depend upon the value of the derivative of f(x)
c) may 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
b) quadratic
c) <p style="text-align: left;"> cubic
d) <p style="text-align: left;"> 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

b)

null matrix

c)

identity 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

b)

upper triangular matrix

c)

diagonal 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

b)

the co-efficient matrix has rank zero

c)

The coefficient matrix must be strictly diagonally dominant.

d)

None of these

(xvii)

If f(x) is a continuous function and f(a).f(b)<0, then

a) there exists one root in (a,b)

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

c) f(x) has odd number of roots

d) none of these.

(xviii)

Bisection method is

a) conditionally and surely convergent

b) unconditionally and surely convergent

c) conditionally convergent

d) none of these.

(xix)

Newton Raphson method is also known as

a) normal method

b) tangent method

c) parallel method

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

b)

not equally spaced

c)

may be equally spaced

d) None of these

(xxv)

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

a)

circle

b)

straight line

c)

ellipse

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

b)

at least n

c)

exactly n

d)

exactly n+1

(xxvii)

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

a)

unique

b)

not unique

c)

has degree 4

d)

none of these.

(xxviii)

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

a) <input type="image" src="/apttest/fck_image/68a.PNG" width="127" height="25" />

b) <p style="text-align: left;"> <input type="image" src="/apttest/fck_image/68b.PNG" width="136" height="27" />

c) <input type="image" src="/apttest/fck_image/68c.PNG" width="129" height="27" />

d) None of these.

(xxix)

Newton’s backward interpolation formula is used to interpolate

a)

near end

b)

near central position

c)

near the beginning

d)

none of these.

(xxx) <input type="image" src="/apttest/fck_image/77(1).png" width="534" height="34" />

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

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

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

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

(xxxi)

Which of the following is wrong?

a)

Divided difference is linear

b)

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

c)

Divided differences are symmetric functions.

d)

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

(xxxii) <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" />

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

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

d)

none of these.

(xxxiii) <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) <p style="text-align: left;"> 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)

Ef(x)

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

(xl) <input type="image" src="/apttest/fck_image/99.PNG" width="346" height="24" />

a) <input type="image" src="/apttest/fck_image/99a.PNG" width="136" height="26" />
b) <input type="image" src="/apttest/fck_image/99b.PNG" width="135" height="27" />
c) <input type="image" src="/apttest/fck_image/99c.PNG" width="138" height="28" />
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-eight formula be a three point quadrature formula.

(xlii) <input type="image" src="/apttest/fck_image/105.PNG" 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=a+(n-1)h

b)

h=b-a

c)

b=a+nh

d)

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

A first order ordinary differential equation

c)

d)

A first order partial differential equation

None of these.

(l)

Which of the following is a multistep method?

a)

b)

Euler’s method

Predictor-Corrector method

c)

d) None of these.

Taylor’s series method

(li)

The finite difference method is used to solve

a)

b)

a boundary value problem

a system of ordinary differential equations

c)

d)

a partial differential equation

a system of transcendental equation

(lii) <input type="image" src="/apttest/fck_image/128.PNG" width="350" height="42" />

a) <input type="image" src="/apttest/fck_image/128a.PNG" width="91" height="39" />

b) <input type="image" src="/apttest/fck_image/128b.PNG" width="59" height="37" />

c) <input type="image" src="/apttest/fck_image/128c.PNG" width="66" height="26" />

d) <input type="image" src="/apttest/fck_image/128d.PNG" width="65" height="29" />

(liii)

The finite difference method is also known as

a) b) iterative method

net method.

c) integration solving method d) none of these

(liv)

Milne’s corrector formula of order 4 is

a) <input type="image" src="/apttest/fck_image/132a.PNG" width="251" height="28" />

b) <input type="image" src="/apttest/fck_image/132b.PNG" width="262" height="35" />

c) <input type="image" src="/apttest/fck_image/132c.PNG" width="250" height="25" />

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)

initial value of y

d) none of these.

(lvii)

Which of the following is Predictor –Corrector method?

a)

Milne’s method

b)

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) <input type="image" src="/apttest/fck_image/91(3).png" width="28" height="18" />

c) <input type="image" src="/apttest/fck_image/91b(2).png" width="26" height="17" />

d) <input type="image" src="/apttest/fck_image/91c(3).png" width="26" height="17" />

(lix) <input type="image" src="/apttest/fck_image/149.PNG" width="537" height="35" />

a) 2.22133

b) 2.21133

c) 2.22130

d) None of these.

(lx) <input type="image" src="/apttest/fck_image/150(1).png" width="543" height="35" />

a) 0.4133
b) 0.46333
c) 0.5123
d) None of these.