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BACHELOR OF COMPUTER APPLICATIONS
BCA (REVISED)
Term-End Practical Examination

00355

December, 2013

BCSL-058 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time allowed : 1 hour   *Maximum Marks : 50*

Note :   *(i)   There are **two** questions in this paper, both are compulsory.*

(ii)   Each question carries 20 marks.

*(iii)   10 marks are for **viva-voce**.*

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1.   Write a program in C to calculate the value of e^x by using its series expansion, given   **20**
below :

$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \ldots$$

Note : evaluate e^x only up to first three terms.

also find the value of e^x by using the inbuilt function in C.

Compare the results produced by inbuilt function and the result produced by you, to find the error.

2.   Write a programme in C to demonstrate the operation of following operators, for the   **20**
function $f(x) = x^2 + x + 7$

(a)   Forward Difference Operator

(b)   Central Difference Operator

The given interval is [2, 7] and stepsize (h) is 1.0

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BACHELOR OF COMPUTER APPLICATIONS
BCA (REVISED)
Term-End Practical Examination

01474

December, 2013

BCSL-058 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time allowed : 1 hour   *Maximum Marks : 50*

Note :   *(i)*   *There are* **two** *questions in this paper, both are* **compulsory.**

        (ii)   *Each question carries* **20** *marks.*

        (iii)   **10** *marks are for* **viva-voce.**

1. Write a programme in C, to demonstrate the concept of "LINEAR INTERPOLATION". **20**
Use the programme written by you, to find the value at any point lying between the
coordinates of the nodal points entered by you.

2. Write a programme in C, to find the solution of following system of equations, by using **20**
"Gauss-Elimination Method".

$$4x + y + z = 4$$

$$x + 4y - 2z = 4$$

$$-x + 2y - 4z = 2$$

No. of Printed Page : **1**

BACHELOR OF COMPUTER APPLICATIONS
BCA (REVISED)
Term-End Practical Examination

01844

December, 2013

BCSL-058 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time allowed : 1 hour   *Maximum Marks : 50*

Note :   *(i)*   *There are **two** questions in this paper, both are **compulsory**.*
          (ii) *Each question carries **20** marks.*
          (iii) ***10** marks are for **viva-voce**.*

1. Write a programme in C, to find the root of following equation by using "BISECTION **20**
    METHOD"

    Equation : $x^3 - 5x + 1 = 0$

2. Write a programme in C, to demonstrate the operation of "Backward Difference **20**
    Operator" and "Averaging operator", for the function $f(x) = x^2 + x + 7$. The given
    interval is [2, 7] and stepsize (h) is 1.0.

SET - 4

BACHELOR OF COMPUTER APPLICATIONS
BCA (REVISED)
Term-End Practical Examination

00831

December, 2013

BCSL-058 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time allowed : 1 hour   *Maximum Marks : 50*

Note :   (i)   *There are **two** questions in this paper, both are **compulsory**.*
       (ii)   *Each question carries 20 marks.*
       (iii)   ***10 marks are for viva-voce.***

1.   Write a programme in C, to calculate the value of "cos$x$" by using its series expansion, given below :   **20**

$$\text{Cos } x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \ldots$$

Note : Evaluate Cos$x$ only up to first three terms

Also find the value of cos$x$ by using the inbuilt function in C.

Compare the results i.e the result produced by your programme for series and that produced by inbuilt function. Based on comparison, determine the error.

2.   Write a programme in C, to find the root of equation $x^3 - 5x + 1 = 0$ by using "NEWTON RAPHSON METHOD".   **20**

BACHELOR OF COMPUTER APPLICATIONS
BCA
Term-End Practical Examination   02001

June, 2014

BCSL-058 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time allowed : 1 hour   *Maximum Marks : 50*

Note :   (i)   *There are **two** questions in this paper. Both are **compulsory**.*

(ii)   *Each question carries **Twenty** marks. **Ten** marks are reserved for **viva-voce**.*

(iii)   *The programs may be written in any **one** of the programming languages out of C, C++, MS-Excel or spread sheet.*

1.   Write a program to obtain the value of e correct upto second decimal place using the   **20**
series

$$e^x = 1 + x + \left(\frac{x^2}{|2} \right) + \left(\frac{x^3}{|3} \right) + \text{----------}, \text{ where } |n \text{ denotes factorial of n.}$$

2.   Write a program to approximate the value of a definite integral using Trapezoidal rule   **20**

and use it to approximate the value of $\int_2^6 (x^2 + x + 2)\, dx$ with h = 1.0

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SET - 2

BACHELOR OF COMPUTER APPLICATIONS
BCA
Term-End Practical Examination

01937

June, 2014

BCSL-058 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time allowed : 1 hour   *Maximum Marks : 50*

Note :   *(i)   There are **two** questions in this paper. Both are **compulsory**.*

*(ii)   Each question carries **20** marks. Ten marks are reserved for **viva**.*

*(iii) The programs may be written in any **one** programming languages out of C, C++, MS-Excel or spread sheet.*

1. Write a program to calculate the value of sine of a value given in radians, using the formula :   **20**

$$\sin(x) = x - \left(x^3 / 3!\right) + \left(x^5 / 5!\right) - \left(x^7 / 7!\right) + \ldots\ldots\ldots\ldots$$

2. Write a computer program to implement Simpron's 1/3 formula to approximate the value of a definite integral. Use it for approximating the value of $\int_0^1 dx/(1+x)$ **20**

(Using three nodal points)

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SET - 3

BACHELOR OF COMPUTER APPLICATIONS BCA
Term-End Practical Examination
June, 2014

00631

BCSL-058 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time allowed : 1 hour   *Maximum Marks : 50*

Note : (i)   There are **two** questions in the paper. Both are **compulsory**.
          (ii) Each question carries **20** marks. **Ten** marks are reserved for viva.
          (iii) The programs may be written in any **one** of the programming languages out of C, C++, MS-Excel or spread sheet.

1. Write a program to implement Bisection Method for finding a positive root of the equation   **20**
    $x^2 - 4x - 21 = 0$. You have to make a suitable choice for the bounds.

2. Write a computer program that implements Trapezoidal rule for approximating the   **20**
    value of a definite integral. Use it to approximate the value of $\int_{0}^{1.0} x^{1/3}\, dx$

    (using only two nodal points)

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BACHELOR OF COMPUTER APPLICATIONS
BCA
Term-End Practical Examination

00289

June, 2014

BCSL-058 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time allowed : 1 hour   *Maximum Marks : 50*

Note :   (i)   *There are **two** questions in the paper. Both are **compulsory**.*

(ii)   *Each question carries 20 marks. Ten marks are reserved for viva.*

(iii) *The programs may be written in any **one** of the programming languages out of C, C++, MS-Excel or spread sheet.*

1.   Write a program to implement Secant Method OR Bisection Method (only one of the methods) for finding out an approximate root of the equation $x^3 + x - 6 = 0$. If you are using Secant Method, start with $x_0 = 1$ and $x_1 = 2$. For Bisection Method, make your own assumptions.   **20**

2.   Write a program to implement Simpson's $\frac{1}{3}$ formula to approximate the value of a definite integral. Further use your program to approximate the value of $\int_{1.1}^{1.5} e^x \, dx$, using h = 0.2.   **20**

BACHELOR OF COMPUTER APPLICATIONS (Revised)
(BCA)

00924

Term-End Practical Examination

December, 2014

BCSL-058(P)/S1 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : (i) *There are two questions in this paper, and both are **compulsory**.*

(ii) *Each question carries twenty marks.*

(iii) *Ten marks are reserved for viva-voce.*

(iv) *The programs may be written in any **one** of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to calculate the value of Cosine of a given value x in radians, using the formula :   *20*

$$\cos x = 1 - (x^2/2!) + (x^4/4!) - (x^6/6!) + ...$$

2. Write a computer program that implements Trapezoidal rule for approximating the value of a definite integral. Use it to approximate the value of

$$\int_{3}^{8} (2x^3 + 5x - 3) \, dx \quad \text{with} \quad h = 1 \cdot 0.$$

    20

BCSL-058(P)/S2

BACHELOR OF COMPUTER APPLICATIONS (Revised)
(BCA)

01664

Term-End Practical Examination

December, 2014

BCSL-058(P)/S2 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : *(i)   There are two questions in this paper, and both are **compulsory**.*

(ii)   Each question carries twenty marks.

(iii) Ten marks are reserved for viva-voce.

*(iv) The programs may be written in any **one** of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement Bisection Method for finding a positive root of the equation

    $$x^2 + x - 20 = 0.$$

    You have to make a suitable choice for the bounds.   **20**

2. Write a computer program that implements Simpson's 1/3 formula to approximate the value of a definite integral. Further, use the program to approximate the value of

    $$\int_{1\cdot3}^{1\cdot7} e^x \, dx, \text{ using } h = 0\cdot2.$$ **20**

BCSL-058(P)/S3

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

00514

Term-End Practical Examination

December, 2014

BCSL-058(P)/S3 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note :   (i)   *There are two questions in this paper, and both are* **compulsory**.

   (ii)   *Each question carries twenty marks.*

   (iii)   *Ten marks are reserved for viva-voce.*

   (iv)   *The programs may be written in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1.   Write a program to calculate the value of Sine of a given value x in radians, using the formula :   **20**

$$\sin(x) = x - (x^3/3!) + (x^5/5!) - (x^7/7!) + ...$$

2.   Write a computer program that implements Trapezoidal rule for approximating the value of a definite integral. Use the program to approximate the value of

$$\int_{1.0}^{2.0} x^{2/3} \, dx \text{ (using only two nodal points).}$$ **20**

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00184

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

December 2014

BCSL-058(P)/S4 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour *Maximum Marks : 50*

Note : (i) *There are two questions in this paper, and both are* **compulsory**.

(ii) *Each question carries twenty marks.*

(iii) *Ten marks are reserved for viva-voce.*

(iv) *The programs may be written in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement Bisection Method or Secant Method (only one of the methods) for finding out an approximate root of the equation $x^2 + 5x + 6 = 0$. You may make your own assumptions about starting values. *20*

2. Write a computer program that implements Simpson's 1/3 formula to approximate the value of a definite integral. Further, use the program to approximate the value of *20*

$$\int_{2}^{7} (x^2 + 3x + 2)\, dx \text{ with } h = 1 \cdot 0.$$

BCSL-058(P)/S1

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

0123

June, 2015

BCSL-058(P)/S1 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note :   (i)   *There are two questions in this paper, and both are* **compulsory**.

      (ii)   *Each question carries 20 marks.*

      (iii)   *10 marks are reserved for viva-voce.*

      (iv)   *The programs may be written in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement Bisection Method for finding a positive root of the equation

$$x^2 - 2x - 24 = 0.$$ *20*

2. Write a computer program that implements Trapezoidal rule for approximating the value of a definite integral. Use the program to approximate the value of

$$\int_{2 \cdot 0}^{3 \cdot 0} x^{4/3} \, dx, \quad \text{using two nodal points.}$$ *20*

No. of Printed Pages : 1

BCSL-058(P)/S2

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

01723

June, 2015

BCSL-058(P)/S2 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour
Maximum Marks : 50

Note : (i) *There are two questions in this paper, and both are* **compulsory**.

(ii) *Each question carries 20 marks.*

(iii) *10 marks are reserved for viva-voce.*

(iv) *The programs may be written in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a **program** to calculate the value of Cosine of a given value of x in radians, using the following formula : 20

$$\cos x = 1 - (x^2/2!) + (x^4/4!) - (x^6/6!) + ...$$

2. Write a program that implements Simpson's 1/3 formula to approximate the value of a definite integral. Further, use the formula to approximate the value of

$$\int_{3}^{6} (2x^3 + 5x + 3)\, dx \quad \text{with h = 1·0.}$$

20

BCSL-058(P)/S3

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

June, 2015

00423

BCSL-058(P)/S3 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour *Maximum Marks : 50*

Note : (i) *There are two questions in this paper, and both are* **compulsory**.

(ii) *Each question carries 20 marks.*

(iii) *10 marks are reserved for viva-voce.*

(iv) *The programs may be written in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement Bisection Method **or** Secant Method (only one of the methods) for finding out an approximate root of the equation $x^2 - 9x + 20 = 0$. You may make your own assumptions. *20*

2. Write a computer program that implements Trapezoidal rule for approximating the value of a definite integral. Use it to approximate the value of

$$\int_4^7 (4x^2 + 3x - 8)\, dx \quad \text{with } h = 1 \cdot 0.$$

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BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

00193

June, 2015

BCSL-058(P)/S4 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note :   *(i)*   *There are two questions in this paper, and both are **compulsory**.*

      (ii)   *Each question carries 20 marks.*

      (iii)   *10 marks are reserved for viva-voce.*

      (iv)   *The programs may be written in any **one** of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to calculate the value of sine of a given value x in radians, using the following formula :   *20*

$$\sin(x) = x - (x^3/3!) + (x^5/5!) - (x^7/7!) + \ldots$$

2. Write a computer program that implements Simpson's 1/3 formula to approximate the value of a definite integral. Further, use the program to approximate the value of

$$\int_{2.2}^{2.6} e^x \, dx, \quad \text{using } h = 0.2.$$

    20

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

03009

Term-End Practical Examination

December, 2015

BCSL-058(P)/S1 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : (i) *There are two questions in this paper, and both are **compulsory**.*

(ii) *Each question carries 20 marks.*

(iii) *10 marks are reserved for viva-voce.*

(iv) *The programs may be written in any **one** of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to calculate the value of cosine of an angle given in radians, accurate upto four places of decimal, using the formula

    $$\cos(x) = 1 - (x^2/2!) + (x^4/4!) + \ldots,$$

    where n! denotes factorial of $n = 1.2. \ldots .n$ *20*

2. Write a program to implement Simpson's 1/3 formula to approximate the value of a definite integral. Use it to approximate the value of $\int_{0}^{2} dx/(1 + x^2)$, using three nodal points.   *20*

No. of Printed Pages : 1

BCSL-058(P)/S2

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

December, 2015

00309

BCSL-058(P)/S2 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : (i) *There are two questions in this paper, and both are* **compulsory**.

(ii) *Each question carries 20 marks.*

(iii) *10 marks are reserved for viva-voce.*

(iv) *The programs may be written in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement Bisection method for finding a positive root of the equation $x^2 - 5x - 36 = 0$. You have to make a suitable choice for the bounds.   *20*

2. Write a program to implement Simpson's 1/3 formula to approximate the value of a definite integral. Further, use your program to approximate the value of

$$\int_{2 \cdot 3}^{2 \cdot 7} e^x \, dx, \quad \text{using } h = 0 \cdot 2.$$
                      20

No. of Printed Pages : 1

BCSL-058(P)/S3

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

00529

Term-End Practical Examination

December, 2015

BCSL-058(P)/S3 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : (i)   *There are two questions in this paper, and both are* **compulsory**.

(ii)   *Each question carries 20 marks.*

(iii)   *10 marks are reserved for viva-voce.*

(iv)   *The programs may be written in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement Secant method or Bisection method (only **one** of the methods) for finding an approximate root of a polynomial equation. Use it to find a root of $x^2 - 3x - 10 = 0$. Make your assumptions about bounds.   *20*

2. Write a program to implement Trapezoidal rule for approximating the value of a definite integral. Use it to approximate the value of $\int_{1\cdot0}^{2\cdot0} x^{2/3}\,dx$, using only two nodal points.   *20*

BCSL-058(P)/S4

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

December, 2015

BCSL-058(P)/S4 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : (i) *There are two questions in this paper, and both are* **compulsory**.

(ii) *Each question carries 20 marks.*

(iii) *10 marks are reserved for viva-voce.*

(iv) *The programs may be written in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to obtain the value of e^2 correct upto four places of decimal using the series

$$e^x = 1 + x + (x^2/\lfloor 2) + (x^3/\lfloor 3) + \ldots$$

where $\lfloor n$ denotes the factorial of n .   20

2. Write a program to approximate the value of a definite integral using Trapezoidal rule and use it to approximate the value of

$$\int_{4}^{8} (x^3 + 2x^2 + 7) \, dx, \text{ with h = 1·0.}$$ 20

No. of Printed Pages : 1

BCSL-058(P)/S1

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

02348

Term-End Practical Examination

June, 2016

BCSL-058(P)/S1 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : *(i) There are two questions in this paper, and both are **compulsory**.*

(ii) Each question carries 20 marks.

(iii) 10 marks are reserved for viva-voce.

*(iv) The programs may be implemented in any **one** of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to calculate the value of sine of an angle given in radians, or in degrees, accurate up to four places of decimals, using the formula

    $$\sin(x) = x - x^3/(3!) + x^5/(5!) - \ldots$$

    and then find the values of $\sin(\pi/2)$, $\sin(\pi/4)$ (or $\sin 90°$ and $\sin 45°$). *20*

2. Write a program to implement Simpson's 1/3 formula to approximate the value of a definite integral. Further, use your program to approximate the value of

    $$\int_{1\cdot 3}^{1\cdot 9} e^x \, dx \quad \text{with } h = 0\cdot 2.$$

    20

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No. of Printed Pages : 1 | **BCSL-058(P)/S2**

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

01726

Term-End Practical Examination

June, 2016

BCSL-058(P)/S2 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : (i)   *There are two questions in this paper, and both are* **compulsory**.

(ii)   *Each question carries 20 marks.*

(iii) *10 marks are reserved for viva-voce.*

(iv)   *The programs may be implemented in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement the bisection method for finding a positive root of the equation $x^2 + x - 20 = 0$. Make a suitable choice for bounds.   *20*

2. Write a program to implement the trapezoidal rule for approximating the value of
$$\int_{2 \cdot 2}^{3 \cdot 2} x^{3/4} \, dx, \quad \text{using only two nodal points.} \qquad 20$$

BCSL-058(P)/S3

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

00206

June, 2016

BCSL-058(P)/S3 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note :   *(i)*   *There are two questions in this paper, and both are* **compulsory**.

   (ii)   *Each question carries 20 marks.*

   (iii)   *10 marks are reserved for viva-voce.*

   (iv)   *The programs may be implemented in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1.   Write a program to implement Secant method or Bisection method (only **one** of the methods) for finding an approximate root of an equation. Use it to find a root of $2x^2 - 9x + 9 = 0$.   **20**

2.   Write a program to implement Simpson's 1/3 formula to approximate the value of a definite integral. Use it to approximate the value of $\int_{1}^{3} dx / (1 + x^2)$, using three nodal points.   **20**

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BACHELOR OF COMPUTER APPLICATIONS (Revised)
(BCA)

Term-End Practical Examination

June, 2016

BCSL-058(P)/S4 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

□□□26

Time : 1 Hour   *Maximum Marks : 50*

Note :   (i)   *There are two questions in this paper, and both are* **compulsory.**

(ii)   *Each question carries 20 marks.*

(iii)   *10 marks are reserved for viva-voce.*

(iv)   *The programs may be implemented in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

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1.   Write a program to calculate the value of cosine of an angle given in radians or degrees, accurate up to four places of decimals, using the formula

$$\cos(x) = 1 - x^2/(2!) + x^4/(4!) - \ldots$$

and then find the values of $\cos(\pi/2)$ and $\cos(\pi/4)$ (or cos 90° and cos 45°).   *20*

2.   Write a program to implement secant method for finding an approximate root of an equation. Use it to find a root of $6x^2 - 11x + 3 = 0$, which is a positive root.   *20*

BCSL-058(P)/S1

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

December, 2016

ÜÜ993

BCSL-058(P)/S1 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note :   *(i)*   *There are two questions in this paper, and both are* **compulsory**.

   (ii)   *Each question carries 20 marks.*

   (iii)   *10 marks are reserved for viva-voce.*

   (iv)   *The programs may be implemented in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to calculate the value of cosine of an angle (given in radians or degrees), accurate up to four places of decimals, using the formula

$$\cos x = 1 - \frac{x^2}{(2!)} + \frac{x^4}{(4!)} + ...,$$

and then find the values of cos ($\pi/3$) and cos ($\pi/4$) (or cos 60° and cos 45°).   *20*

2. Write a program to implement the trapezoidal rule for approximating the value of

$$\int_{4\cdot3}^{5\cdot3} x^{2/3} \, dx,$$ using only two nodal points.   *20*

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BACHELOR OF COMPUTER APPLICATIONS (Revised)
(BCA)

01343

Term-End Practical Examination
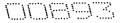
December, 2016

BCSL-058(P)/S2 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : (i) *There are two questions in this paper, and both are* **compulsory**.

  (ii) *Each question carries 20 marks.*

  (iii) *10 marks are reserved for viva-voce.*

  (iv) *The programs may be implemented in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement Secant method or Bisection method (only one of the methods) for finding an approximate root of an equation. Use it to find a root of $5x^2 - 3x + 2 = 0$.   *20*

2. Write a program to implement Simpson's 1/3 formula to approximate the value of a definite integral. Further, use your program to approximate the value of

$$\int_{2\cdot3}^{2\cdot9} e^x \, dx, \text{ with } h = 0\cdot2.$$ *20*

$\boxed{\textbf{BCSL-058(P)/S3}}$

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

December, 2016

00923

BCSL-058(P)/S3 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour *Maximum Marks : 50*

Note : (i) *There are two questions in this paper, and both are* **compulsory**.

(ii) *Each question carries 20 marks.*

(iii) *10 marks are reserved for viva-voce.*

(iv) *The programs may be implemented in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement the Bisection method for finding a positive root of the equation $x^2 + x - 20 = 0$. Make a suitable choice for bounds. **20**

2. Write a program to implement Simpson's 1/3 formula to approximate the value of a definite integral. Use it to approximate the value of $\int_{2}^{4} dx/(1 + x^2)$. **20**

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No. of Printed Pages : 1　　　　　　　　　　　　　　　| **BCSL-058(P)/S4** |

BACHELOR OF COMPUTER APPLICATIONS (Revised)
(BCA)

Term-End Practical Examination

December, 2016

BCSL-058(P)/S4 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour　　　　　　　　　　　　　　　　　　　*Maximum Marks : 50*

Note :　(i)　*There are two questions in this paper, and both are **compulsory**.*

(ii)　*Each question carries 20 marks.*

(iii)　*10 marks are reserved for viva-voce.*

(iv)　*The programs may be implemented in any **one** of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to calculate the value of sine of an angle (given in radians or in degrees), accurate up to four places of decimals, using the formula

$$\sin(x) = x - \frac{x^3}{(3!)} + \frac{x^5}{(5!)} \dots$$

   and then find the values of sin ($\pi/3$) and sin ($\pi/4$) (or sin 60° and sin 45°).　　**20**

2. Write a program to implement the trapezoidal rule for approximating the value of

$$\int_{3.2}^{4.2} x^{2/3} \, dx,$$ using only two nodal points.　　**20**

No. of Printed Pages : 1 **BCSL-058(P)/S1**

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

June, 2017

BCSL-058(P)/S1 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour *Maximum Marks : 50*

Note : *(i)* *There are two questions in this paper, and both are* **compulsory**.

(ii) *Each question carries 20 marks.*

(iii) *10 marks are reserved for viva-voce.*

(iv) *The programs may be implemented in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to calculate the value of cosine of an angle given in radians, accurate up to four places of decimal, using the formula

$$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} + ...,$$

where n! = 1.2.3 ... n. *20*

2. Write a program to implement Simpson's (1/3) formula to approximate the value of a definite integral. Further use your program to approximate the value of

$$\int_{1\cdot4}^{1\cdot9} e^x \, dx, \text{ using } h = 0\cdot2.$$
20

BCSL-058(P)/S2

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

01895

June, 2017

BCSL-058(P)/S2 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour *Maximum Marks : 50*

Note : *(i) There are two questions in this paper, and both are **compulsory**.*

(ii) Each question carries 20 marks.

(iii) 10 marks are reserved for viva-voce.

*(iv) The programs may be implemented in any **one** of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement Bisection method for finding a positive root of the equation $x^2 - 9x + 20 = 0$. You have to make a suitable choice for bounds. **20**

2. Write a program to implement Trapezoidal rule for approximating the value of a definite integral. Use it to approximate the value of

$$\int_{2\cdot0}^{3\cdot0} x^{2/3}\,dx,\ \text{using only two nodal points.}$$ **20**

BCSL-058(P)/S3

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

00864

June, 2017

BCSL-058(P)/S3 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note :   *(i)*   *There are two questions in this paper, and both are* **compulsory.**

      (ii)   *Each question carries 20 marks.*

      (iii)   *10 marks are reserved for viva-voce.*

      (iv)   *The programs may be implemented in any* **one** *of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1. Write a program to implement Secant method or Bisection method (only one of these) for finding an approximate value of a root of

   $$x^2 - 13x + 40 = 0.$$

   Make your own assumptions about bounds.   *20*

2. Write a program to implement Simpson's (1/3) rule to approximate the value of a definite integral. Use it to approximate the value of

   $$\int_{2}^{4} dx/(1 + x^3),$$ using three nodal points.   *20*

No. of Printed Pages : 1

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

00965

June, 2017

BCSL-058(P)/S4 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : (i)   *There are two questions in this paper, and both are **compulsory**.*

  (ii)   *Each question carries 20 marks.*

  (iii)   *10 marks are reserved for viva-voce.*

  (iv)   *The programs may be implemented in any **one** of the programming languages out of C, C++, MS-Excel or Spreadsheet.*

1.   Write a program to calculate the value of sine of an angle given in radians, or in degrees, accurate up to four places of decimals, using the formula

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \dots$$

where $n! = 1.2.3 \dots n$.

Then find the value of $\sin(\pi/2)$ and $\sin(\pi/4)$... (or $\sin 90°$ and $\sin 45°$)   *20*

2.   Write a program to implement the Trapezoidal rule for approximating the value

of $\int_{4.2}^{5.2} x^{3/4} \, dx$, using two nodal points.   *20*

BACHELOR OF COMPUTER APPLICATIONS (Revised)
(BCA)

00562

Term-End Practical Examination

December, 2017

BCSL-058(P)/S1 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note :   (i)   *There are two questions in this paper and both are* **compulsory.**

(ii)   *Each question carries 20 marks.*

(iii) *Rest 10 marks are for viva-voce.*

(iv)   *The programs may be implemented in any* **one** *of the programming languages C or C++, or MS-Excel or any other Spreadsheet software.*

1.   Write a program to calculate the value of e^x using the formula

$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + ..., \frac{x^n}{n!} + ...$$

where n is ≤ 10 and $0 < x \leq 1$.

Please note that $n! = n \times (n-1) \times (n-2) ... \times 3 \times 2 \times 1.$ *20*

2.   Write a program to implement Simpson's $\left(\frac{1}{3}\right)$ formula to approximate the value

of a definite integral given below :   *20*

$$I = \int_{0}^{0.8} \frac{dx}{\sqrt{1+x}}, \quad \text{using } h = 0.2.$$

BCSL-058(P)/S2

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

01612

December, 2017

BCSL-058(P)/S2 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note :   *(i)*   *There are two questions in this paper and both are **compulsory**.*

      (ii)   *Each question carries 20 marks.*

      (iii)   *Rest 10 marks are for viva-voce.*

      (iv)   *The programs may be implemented in any **one** of the programming languages C or C++, or MS-Excel or any other Spreadsheet software.*

1. Write a program to implement Bisection method to find a positive root of the equation $x^3 + 4x^2 - 10 = 0$, correct upto two decimal places. You may assume initial estimates as 1 and 2.   *20*

2. Write a program to implement Trapezoidal rule for approximating the value of a definite integral

$$I = \int_{0}^{0.8} \frac{dx}{\sqrt{1 + x^2}}, \quad \text{using h} = 0.2.$$ *20*

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$\boxed{\text{BCSL-058(P)/S3}}$

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

00542

Term-End Practical Examination

December, 2017

BCSL-058(P)/S3 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour *Maximum Marks : 50*

Note : *(i)* *There are two questions in this paper and both are* **compulsory***.*

(ii) *Each question carries 20 marks.*

(iii) *Rest 10 marks are for viva-voce.*

(iv) *The programs may be implemented in any* **one** *of the programming languages C or C++, or MS-Excel or any other Spreadsheet software.*

1. Write a program to calculate the value of sine of an angle given in radians using the formula

$$\sin(x) = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \frac{x^9}{9!} - \frac{x^{11}}{11!} + \frac{x^{13}}{13!} - \frac{x^{15}}{15!} .$$

(Only the above 8 terms should be used).

Please note the following : *20*

(i) The value x is in radians. (π radians = 180°)

(ii) $n! = n \times (n-1) \times (n-2) \dots \times 3 \times 2 \times 1$

2. Write a program to implement the Trapezoidal rule for approximating the value of the following definite integral : *20*

$$I = \int_0^6 (x^2 + x + 2)\, dx, \quad \text{using } h = 1{\cdot}0.$$

BCSL-058(P)/S1

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

02185

June, 2018

BCSL-058(P)/S1 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note : (i) *There are two questions in this paper, and both are* **compulsory**.

(ii) *Each question carries 20 marks.*

(iii) *Rest 10 marks are reserved for viva-voce.*

(iv) *The programs may be implemented in any* **one** *of the programming languages out of C, C++, MS-Excel or any other spreadsheet software.*

1. Write a program to calculate the value of y using the formula

$$y = \left(1 - x + \frac{x^2}{2!} + \frac{x^3}{3!} - \frac{x^4}{4!} + \frac{x^5}{5!} - \frac{x^6}{6!} + \frac{x^7}{7!}\right)$$

where $0 < x \leq 1$

and $n! = n \times (n-1) \times (n-2) \dots 3 \times 2 \times 1$

for example $7! = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$ *20*

2. Write a program to implement Trapezoidal rule for approximating the value of definite integral given below :

$$I = \int_{0.2}^{1} \frac{dx}{\sqrt{5+x}}, \text{ using h} = 0.2.$$ *20*

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No. of Printed Pages : 1

BCSL-058(P)/S2

**BACHELOR OF COMPUTER APPLICATIONS (Revised)
(BCA)**

Term-End Practical Examination

June, 2018

01076

BCSL-058(P)/S2 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note :   (i)   *There are two questions in this paper, and both are* **compulsory.**

(ii)   *Each question carries 20 marks.*

(iii)   *Rest 10 marks are reserved for viva-voce.*

(iv)   *The programs may be implemented in any* **one** *of the programming languages C, C++, you can use any spreadsheet Software or MS-Excel.*

1.   Write a program to implement Bisection Method to find a positive root of the equation, $x^2 + 2x - 3 = 0$, correct up to two decimal places. You may assume initial estimates as 0 and 3.   *20*

2.   Write a program to implement Simpson's $(1/3)^{rd}$ rule to approximate the value of a definite integral given below :

$$I = \int_{0.2}^{1.0} x^{1/3}\, dx, \text{ using } h = 0.2.$$ *20*

No. of Printed Pages : 1

BCSL-058(P)/S3

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

June, 2018

00089

BCSL-058(P)/S3 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour　　　　　　　　　　　　　　　　　　　　　　*Maximum Marks : 50*

Note :　(i)　*There are two questions in this paper, and both are **compulsory**.*

　　　　(ii)　*Each question carries 20 marks.*

　　　　(iii)　*Rest 10 marks are reserved for viva-voce.*

　　　　(iv)　*The programs may be implemented in any **one** of the programming languages out of C, C++, MS-Excel or spreadsheet package.*

1.　Write a program to implement Secant Method or Bisection Method (only one of these) for finding an approximate value of a positive root of equation

$$x^2 - x - 20 = 0.$$

Make your own assumptions about the bounds.　　　　　　　　*20*

2.　Write a program to implement Trapezoidal rule for approximating the value of a definite integral. Use it to approximate the value of

$$I = \int_{1.2}^{2.0} (x^2 + 3)\, dx, \quad \text{using } h = 0.2.$$
　　　　　　　　　　　　　　　　　　　　　　　　　　　　　　20

No. of Printed Pages : 1

BCSL-058(P)/S4

BACHELOR OF COMPUTER APPLICATIONS (Revised) (BCA)

Term-End Practical Examination

00858

June, 2018

BCSL-058(P)/S4 : COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour   *Maximum Marks : 50*

Note :   (i)   *There are two questions in this paper, and both are* **compulsory**.

(ii)   *Each question carries 20 marks.*

(iii) *Rest 10 marks are reserved for viva-voce.*

(iv)   *The programs may be implemented in any* **one** *of the programming languages out of C, C++, MS-Excel or spreadsheet package.*

1. Write a program to calculate the value of cosine of an angle in radians using the formula

$$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} \ldots$$

You must use the terms upto x^{12}. Please note that

$$n! = n \times (n-1) \times (n-2) \ldots \times 3 \times 2 \times 1. \qquad 20$$

2. Write a program to implement Simpson's $(1/3)^{rd}$ rule to approximate the value of a definite integral. Use this program to approximate the value of   20

$$I = \int_{2 \cdot 2}^{3} (x^3 + 2x^2)\, dx, \quad \text{using } h = 0 \cdot 2.$$

126193

BCSL-058/S2

Bachelor of Computer Application (Revised) (BCA) Term-End Examination December, 2018

COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour

Maximum Marks : 50

Note : (i)   There are *two* questions in this paper and both are compulsory.

(ii)   Each question carries 20 marks.

(iii)   Rest 10 marks are reserved for viva-voce.

[2]

1. Write a program in C/C++ to find the approximate value of roots of equation $x^2 - x - 2 = 0$, by using Secant method.   20

2. Write a program in C/C++ to calculate the value of "$\cos x$" by using the series expansion given below :   20

$$\cos x = 1 - \frac{x^2}{2!} + \frac{x^4}{4!} - \frac{x^6}{6!} + \ldots\ldots$$

Note : Evaluate $\cos x$ only upto first three terms.

Also find the value of $\cos x$ by using the inbuilt function.

Compare the results i. e., the result produced by your program and that produced by inbuilt function. Based on comparison, determine error.

127603

BCSL-058/S3

Bachelor of Computer Application (Revised) (BCA) Term-End Examination December, 2018

COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour　　　　　　　　　　　　*Maximum Marks : 50*

Note : (i)　There are *two* questions in this paper and both are compulsory.

(ii)　Each question carries 20 marks.

(iii)　Rest 10 marks are reserved for viva-voce.

(A-10) P. T. O.

[2]

1. Write a program in C/C++ to find the root of the following equation by using "Bisection Method" : 20

Equation :

$$x^3 - 5x + 1 = 0; x \in \left[1, 2\right]$$

2. Write a program in C/C++ to approximate the value of Integral (I), by using Trapezoidal rule : 20

$$I = \int_{0.2}^{1} \frac{dx}{\sqrt{5 + x}}$$

using step size $\left(h\right) = 0.2.$

1,000

(A-10)

128043

No. of Printed Pages : 2

BCSL-058/S4

Bachelor of Computer Application (Revised) (BCA) Term-End Examination December, 2018

COMPUTER ORIENTED NUMERICAL TECHNIQUES LAB

Time : 1 Hour

Maximum Marks : 50

Note : (i) There are *two* questions in this paper and both are compulsory.

(ii) Each question carries 20 marks.

(iii) Rest 10 marks are reserved for viva-voce.

(A-10) P. T. O.

[2]

1. Write a program in C or C++ to demonstrate the operation of the following operators, for the function $f(x) = x^2 + x + 7$: 20

   (a) Forward Difference Operator

   (b) Central Difference Operator

   The given interval is [2, 7] and step size (h) is 1.0.

2. Write a program in C or C++ to calculate the value of e^x by using its series expansion, given below : 20

$$e^x = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \dots$$

   Note : Evaluate e^x only upto first three terms.

   Also find the value of e^x by using the inbuilt function and compare it with the result produced by your program.

1,000

(A-10)