

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

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

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

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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01937

June, 2014

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Time allowed : 1 hour

Maximum Marks : 50

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

$$\sin(x) = x - \left(\frac{x^3}{3!}\right) + \left(\frac{x^5}{5!}\right) - \left(\frac{x^7}{7!}\right) + \dots$$

2. Write a computer program to implement Simpson'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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Term-End Practical Examination

00631

June, 2014

**BCSL-058 : COMPUTER ORIENTED NUMERICAL
TECHNIQUES LAB**

Time allowed : 1 hour

Maximum Marks : 50

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

 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
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Term-End Practical Examination

June, 2014

00289

**BCSL-058 : COMPUTER ORIENTED NUMERICAL
TECHNIQUES LAB**

Time allowed : 1 hour

Maximum Marks : 50

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- 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.*
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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
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