Tribhuvan University

Faculty of Humanities & Social Sciences

OFFICE OF THE DEAN

2020

Full Marks: 60
Pass Marks: 24
Time: 3 hrs

Bachelor in Computer Application
Course Title: Mathematics II
Code No: CAMT154
Semester: II

Candidates are required to answer all the questions in their own words as far as possible.

Group B

Attempt any SIX questions. **[6×5=30]**

2. Evaluate the limit $\lim_{x-0} \frac{sinx + bx}{ax+sinbx}$
3. Find derivative of the unction $f(x) = \frac{1}{\sqrt{x}}$ by using first principle.
4. Show that the rectangle of largest possible area for a given perimeter is a square.
5. Evaluate the integral $\int e^{ax} \ coss\ bx\ dx$.
6. Find the area bounded by the curve $y^2 = 4x\ and\ the\ line\ y = x$.
7. Use the trapezoidal rule with n = 5 to approximate the integral $\int_1^2 \frac{1}{x} dx$.
8. Solve the linear differential equation:

$$\mathbf{1 + x^2 \frac{dy}{dx} + 2xy = 4x^2}$$

Group C

Attempt any TWO questions. **[2×10=20]**

9. State Rolle's theorem and Lagrange's mean value theorem with thir geometrical interpretation. Verify Rolle's theorem for the function f(x) = sinx, x ϵ[0,π]. Also find a point in the curve represented by given function where the tangent is parallel to the x-axis.
10. Define true error and percentage error. Write three causes which suggest to stop the process bisection while solving a equation. Solve the following system of equations using Gauss elimination partial pivoting method.

    $4x_1+2x_2-3x_3 = 4$

    $X_1-x_2+x_3 = 0$

    $2x_1+4x_2+x_3 = 7$
11. Define Netwton-Raphson method, write it's formula and use it to the solution of the equation $x^3 + x - 1 = 0$ in the interval [0,1] accurate to within 10^{-4} .