## DEPARTMENT OF PHYSICS II semester MSc (Physics) End Semester Examination 2019 Computational Physics Lab

- 1. Write a C program to multiply two 3X3 matrices
- 2. Write a C program to find the roots of the equation  $x^3 2x 5 = 0$  by Bisection method
- 1. Write a C program to find factorial of a number using recursive function
- 2. Write a C program to solve a system of linear equations by Gauss-Jordan method
- 1. Write a C program to find the roots of a quadratic equation
- 2. Write a C program to find least square linear fit for the given set of data
- 1. Write a C program to implement the Taylor series for sinx given by,

$$sinx = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \cdots$$

- 2. Write a C program to find the roots of the equation  $x^3 x/2 5 = 0$  by false-position method
- 1. Write a C program to evaluate the series

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

2. Write a C program to find a real root for the equation  $x^3 - x - 1 = 0$  by Newton Raphson method

- 1. Write a C program to find whether a 3X3 matrix is symmetric or not
- 2. Write a C program to simulate radioactive decay by Monte Carlo method
  - 1. Write a C program to convert rectangular Cartesian coordinates to polar and vice versa
  - 2. Write a C program to find  $\int_{1}^{2} x^{2} dx$  by crude integration using Monte Carlo method
  - 1. Write a C program to find roots of quadratic equation
  - 2. Write a C program to interpolate using Lagrange's formula
- 1. Write a C program to implement the series,

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

2. Write a C program to find the roots of the equation  $x^3 - 2x - 5 = 0$  by Bisection method