Gurudas College

Physics Hons. Practical, 2020

Paper: CC – 5 PRACTICAL

F.M: 30 **TIME: 1 hr**

Answer *any two* questions from the following

1. Write down a Python program to solve the following problem:

$$\int_1^3 \ln x \, dx$$

a) By Simpson's 1/3 rule and correct up to 3 decimal places.

OR

b) By Trapezoidal rule with a tolerance of 10^{-5} 15

2. Write down a Python program to solve the following equation:

$$L\frac{d^2q}{dt^2} + R\frac{dq}{dt} + \frac{q}{C} = E$$

Given: $q(t=0) = 0$, $\left(\frac{dq}{dt}\right)_{t=0} = 0$. Find $q(t=1)$. Plot **q** as a function of **t**.

a) By RK-4 method with h=0.001

OR

b) By Euler's method with h=0.0001 15

3. a) Write down a Python program to find y(5) by using Lagrange interpolation method using the following data.

X	1	2	3	4	6	7	8	9	10
y	1	15	35	61	131	175	225	281	343

OR

b) Write down a Python program to solve the following system using Gauss elimination method.

$$5x + 2y = 2$$
$$2x + y - z = 0$$
$$2x + 3y - z = 3$$

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