GURUDAS COLLEGE M. Sc. Physics Semester-2 Internal Examination, 2020 Paper: PHY 425

Answer <u>ALL</u> questions. [Marks: 25, Time: 1 hour]

1. Write a computer program in C for solving the following first order ordinary differential equation using Euler's method:

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = \frac{y(x)}{x}$$

for given initial condition:

y(1) = 1

Use 100 steps of size h = 0.01.

OR

Write a computer program in C for solving the following first order ordinary differential equation using Euler's method:

$$\frac{\mathrm{d}}{\mathrm{d}x}y(x) = x \ y(x)$$

for given initial condition:

$$y(1) = 1$$

Use 100 steps of size h = 0.01.

[12]

[12]

2. Write a computer program in C for finding the area of a circle of radius r = 1 and centred at (0, 0) using the Monte Carlo method. [13]

OR

Write a computer program in C for finding the area of a square whose vertices are (0,0), (1,0), (1,1), (0,1), using the Monte Carlo method. [13]