

### ASSIGNMENT-3

1-Use Runge-Kutta Method of Fourth Order to find the numerical solution at  $x = 1.4$  for

$$dy/dx = y^2 + x^2, y(1) = 0. \text{ Assume step size } h = 0.2$$

2-Given  $dy/dx = \log_{10}(x+y)$  with initial condition that  $y=1$  when  $x=0$ . Find  $y$  for  $x = 0.2$  and  $x=0.5$  using Euler's modified formula.

3-Find  $\int_0^6 \frac{e^x}{1+x} dx$  approximately using Simpson's  $3/8^{\text{th}}$  rule of integration.

4-The table given below reveals the velocity 'v' of a body during the time 't' specified. Find its acceleration at  $t = 1.1$ .

t: 1.0	1.1	1.2	1.3	1.4
v: 43.1	47.7	52.1	56.4	60.8.

5-Using Taylor's series, find the solution of the differential equation  $xy' = x - y, y(2) = 2$  at  $x = 2.1$  correct to five decimal places.