Answer the following questions: **Max marks: 50**

(Submit your output to the respective questions along with C – program)

1. The table below gives the number of aircraft accidents that occurred during the various days of the week. Develop a C –program for χ^2 - test and test whether the accidents are uniformly distributed over the week.

Days:	Mon	Tue	Wed	Thurs	Fri	Sat
No. of accidents:	14	18	12	11	15	14

Table value of χ^2 at 5% level for 5 d.f is 11.07. (15 M)

2. Design a C program for Runge-Kutta method of 4th order to solve a first order Ordinary Differential Equation with initial condition and hence solve the D.E.
$y' = y - 2x\,y$, $y(0) = 1$ by R-K method with $h = 0.2$ from 0 to 2. (15 M)

3. Write a C program to do numerical integration using (a) Trapezoidal rule; (b) Simpson's 1 / 3 rule; (c) Simpson's 3 /8 rule. Using that program Evaluate
$I = \int_4^{5.2} \log x \, dx$ (20 M)