NAME: SHAILJA KANT TIWARI

COURSE: B.Sc(hons.)Physics

ROLL NO.: 81

**SOURCE CODE:**

clc;

clear;

clf;

k=input("Enter the decay constant=")

n=input("Enter the initial no. of particles=")

c=0

p=input("Enter the decayed percentage of the particles for which corresponding time is to be calculated=")

function **ydot**=f(**t**, **y**)

**ydot**= -(k)\***y**

endfunction

y0=n

t0=0

t=0:1:1000

y=ode(y0,t0,t,f)

xlabel("Time(s)","fontsize",4)

ylabel("No. of particles","fontsize",4)

a=gca()

a.x\_location="origin"

a.y\_location="origin"

title('ODE','fontsize',5)

plot2d(t,y,1)

for t=0:1:1000

y=ode(y0,t0,t,f)

if round(y)==((100-p)/100)\*n

c=c+1

A(c,c)=t

end

end

disp("Time range corresponding to which "+string(p)+"% of particles are decayed="+string(A(1,1))+"sec to "+string(A(c,c))+"sec")

disp("Approximate time ="+string((A(1,1)+A(c,c))/2)+"sec")

**OUTPUT:**

Enter the decay constant=0.00144

Enter the initial no. of particles=100

Enter the decayed percentage of the particles for which corresponding time is to be calculated=75

Time range corresponding to which 75% of particles are decayed=949sec to 9

76sec

Approximate time =962.5sec

