**NASIR-AMEEN NASIR**

**17/ENG02/045**

**COMPUTER ENGINEERING**

**Assignment 5**

**SOLUTION**

**simulation file**

commandwindow

clearvars

clc

format short g

Volume=Kp\*(1-exp(-(t1-Td)/Tp))

data= xlsread('odevbesdata','data1');

t1=(:,1);

Volume=data(:,2);

t0=ones(length(t1),1);

t=[t0 t1]

Kp=1

Td=1

Tp=1

[mcoeff, mcoeffint, mresid, mresidint, manova] = regress(Volume,t)

mcoeff

Kp= round(data(900,2),1)

rsquaredvalue = manova(1)

new\_coeffs = regress(Volume,t)

figure (1a);

plot(t,Volume,'-r')

xlabel('Time (min)')

ylabel('Volume(Litre)')

grid on

grid minor

axis tight

commandwindow

clearvars

clc

format short g

data= xlsread('odevbesdata','data1');

t1=data(:,1);

Volume=data(:,2);

t0=ones(length(t1),1);

t=[t0 t1]

y = (kp,td,tp)(-((exp(t1)-exp(-td))/(tp)));

initials= [0.1,0.1,0.1];

modelfun=@(beta,t) (beta(1)\*(1-exp(-(t1-beta(2)))));

[mcoeff, mcoeffint, mresid, mresidint, manova] = nlinfit(t1,Volume,modelfun,initials)

mcoeff

Kp= round(data(900,2),1)

rsquaredvalue = manova(1)

new\_coeffs = nlinfit(t1,Volume,modelfun,initials)

figure(1b);

plot(t,Volume,'-b')

xlabel('Time (min)')

ylabel('Volume(m^3)')

grid on

grid minor

axis tight

