**FIDE-AKWUOBI ANTHONY CHIZALU**

**17/ENG06/037**

**MECHANICAL ENGINEERING**

**ENG 382 ASSIGNMENT IV**

**FUNCTION FILE**

function [dqdt]= tank(t,q)

dqdt(1)=((-15/500)\*q(1))+((5/1000)\*q(2))+1;

dqdt(2)=((15/500)\*q(1))-((18/1000)\*q(2))+((3/400)\*q(3));

dqdt(3)=((13/1000)\*q(2))-((13/400)\*q(3));

dqdt=dqdt';

end

**SIMULATION FILE**

commandwindow

clearvars

clc

close all

time= [0:1:1200];

initials= [0 0 0];

[t,q]=ode45(@tank,time,initials);

figure(1)

subplot(3,1,1);

plot(t,q(:,1),'go-');

xlabel('Time(min)');

ylabel('Volume(Litre)');

legend('Tank1','Location','south');

grid on;

axis([0 1200 0 50]);

title('Figure 1:Dynamic responses of the tanks');

subplot(3,1,2);

plot(t,q(:,2),'b\*--');

xlabel('Time(min)');

ylabel('Volume(Litre)');

legend('Tank2','Location','south')

grid on;

axis ([0 1200 0 100]);

subplot(3,1,3);

plot(t,q(:,3),'r+-.');

xlabel('Time(min)');

ylabel('Volume(Litre)');

legend('Tank3','Location','south');

grid on;

axis([0 1200 0 40]);

**OUTPUT**

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