**IDOWU JOHN AYOKUNLE**

**17/ENG07/013**

**PETROLEUM ENGINEERING**

**ENG 382: ASSIGNMENT 4**

**QUESTION 1**

**Solution**

**1.) M-FILE**

**function dQdt = idowu(t,Q);**

**dQdt(1,1)=-0.03\*Q(1)+0.005\*Q(2)+1;**

**dQdt(2,1)=0.03\*Q(1)-0.018\*Q(2)+0.0075\*Q(3);**

**dQdt(3,1)=0.013\*Q(2)-0.0325\*Q(3);**

**dQdt=dQdt';**

**FUNCTION FILE (IN THE DYNAMIC RESPONSE TO THE TANKS)**

**commandwindow**

**clearvars**

**clc**

**close all**

**[t,Q]=ode45('idowu',[0:40:1200],[0;0;0]);**

**figure(1)**

**subplot(3,1,1)**

**plot(t,Q(:,1),'-og')**

**xlabel('Time(min)')**

**ylabel('volume(Litre)')**

**legend('Tank 1')**

**grid on**

**grid minor**

**axis ([0 1200 0 50])**

**subplot(3,1,2)**

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

**ylabel('volume(Litre)')**

**legend('Tank 2')**

**grid on**

**grid minor**

**axis ([0 1200 0 100])**

**subplot(3,1,3)**

**plot(t,Q(:,3),'-.+r')**

**xlabel('Time(min)')**

**ylabel('volume(Litre)')**

**legend('Tank 3')**

**grid on**

grid minor

axis ([0 1200 0 40])