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17/ENG01/027

MECHANICAL ENGINEERING

1 function [dmdt] = chokes(t,m) 2

3 dmdt(1)= -((15/500)\*m(1))+ ((5/1000)\*m(2))+1;

4 dmdt(2)= ((15/500)\*m(1))-((18/1000)\*m(2))+ ((3/400)\*m(3));

5 dmdt(3)= ((13/1000)\*m(2))-((13/400)\*m(3));

6

 • dmdt=dmdt';

 • end

 • commandwindow

 • clear

 • clc

 • close all

5 width= [0:1:1200];

 • initial=[0 0 0];

 • [t,Q]= ode45(@chokes,width,initial);

 • figure(1)

 • subplot(3,1,1)

10 plot(t,Q(:,1),'go-')

 • xlabel('Time (min)')

 • ylabel('Volume(litres)')

 • legend('Tank 1', 'Location', 'South')

 • grid on

 • axis tight

 • title('Figure 1:Dynamic Responses of the Tanks')

 • subplot(3,1,2)

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

 • xlabel('Time (min)')

 • ylabel('Volume(litres)')

 • legend('Tank 2', 'Location', 'South')

 • grid on

 • axis tight

 • subplot(3,1,3)

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

 • xlabel('Time(min)')

 • ylabel('Volume (litres)')

 • legend('Tank 3', 'Location', 'South' )

 • grid on

 • axis tight