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DEPT: CHEMICAL ENGINEERING

COURSE CODE: ENG 382

COURSE TITLE: ENGINEERING MATHEMATICS IV

### **ASSIGNMENT FOUR SOLUTION**

#### **FUNCTION COMMAND**

```
function dqdt = ememnnn(t,q)
dqdt(1)= (-0.03*q(1))+(0.005*q(2))+1;
dqdt(2)= (0.03*q(1))-(0.018*q(2))+(0.0075*q(3));
dqdt(3)= (0.013*q(2))-(0.0325*q(3));
dqdt=dqdt';
end
```

#### **SIMULATION**

```
commandwindow
clearvars
clc
close all
[t,q]= ode45('ememnnn',[0: 45: 1200],[0 0 0]);

figure(1);
subplot(3,1,1)
plot(t,q(:,1),'o-g')
xlabel('Time (min)')
ylabel('Volume(Litre)')
legend('Tank 1')
grid on
grid minor
```

```
axis tight
```

```
subplot(3,1,2)
```

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

```
xlabel('Time (min)')
```

```
ylabel('Volume(Litre)')
```

```
legend ('Tank 2')
```

```
grid on
```

```
grid minor
```

```
axis tight
```

```
subplot(3,1,3)
```

```
plot(t,q(:,1),'+-r')
```

```
xlabel('Time (min)')
```

```
ylabel('Volume(litre)')
```

```
legend ('Tank 2')
```

```
grid on
```

```
grid minor
```

```
axis tight
```

