Oyebanji oreohwa
Computer engineering
16/MHS01/219

QUESTION 1

```
commandwindow
clear
clc
close all

syms y(t)
T1 = diff(y,t,1)
T2 = diff(y,t,2)
d  = [T2 + (5*T1) + (6*y)== cos(t)]
dy = diff(y,t)
dcond = [y(0)==5,dy(0)==3]
solution = dsolve(d,dcond)
pretty(solution)
tn = [0:0.1:50]
z = subs(solution,tn)
figure(1)
plot(tn,z)
xlabel('time(min)')
ylabel('vibrations')
grid on
grid minor
axis tight
```

QUESTION 2. (continued line of command from 1)

```
syms T1(t) T2(t)
dT2 = diff(T2,t)
dT1 = diff(T1,t)
g = [dT1 + (3*T2) == exp(-2*t) , dT2 - (3*T1) == exp(2*t)]
gcond = [T2(0) == 30 , T1(0) == 30]
d  = dsolve(g,gcond)
T2 = d.T2
T1 = d.T1
pretty(T2)
pretty(T1)
tn = [0:0.1:3.5]
k1 = subs(T1,tn)
k2 = subs(T2,tn)
figure(1)
plot(tn,k1,tn,k2)
grid on
```

```
grid minor
axis tight
xlabel('Time(hour)')
ylabel('Temperature(degree celsius)')
legend('T1(degree celsius)','T2(degree celsius)')
```

QUESTION 3. (continued line of command from 2)

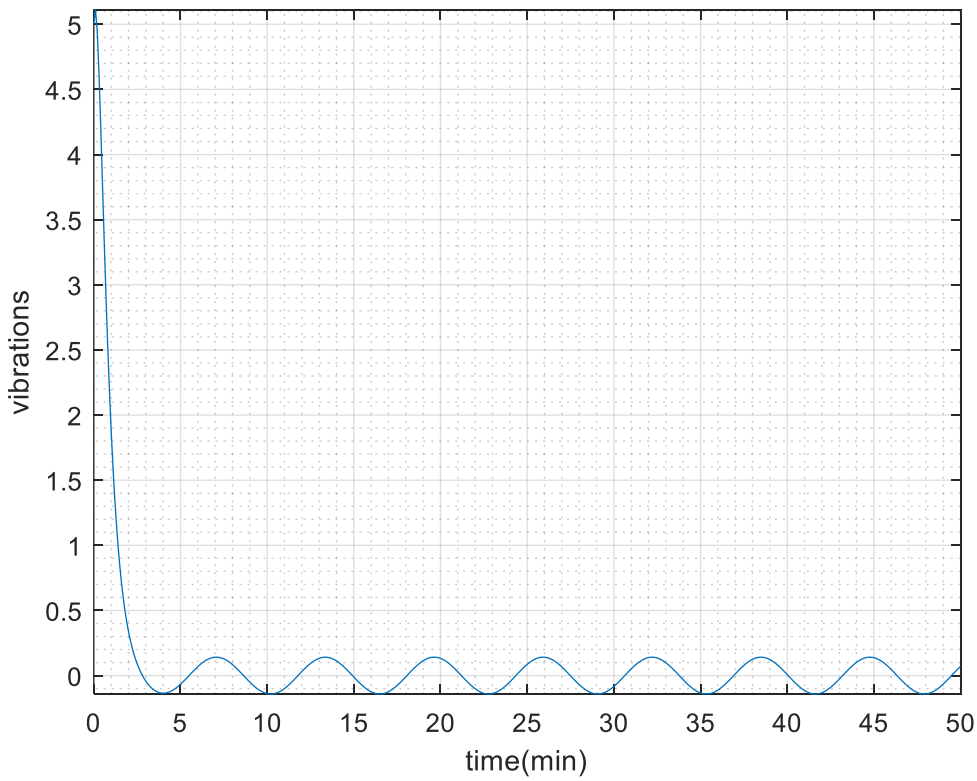
```
syms I(t) L R E
df = [diff(I,t)*L + R*I == E]
dfcondition = [I(0) == 0 ]
dg = dsolve(df,dfcondition)
pretty(dg)
```

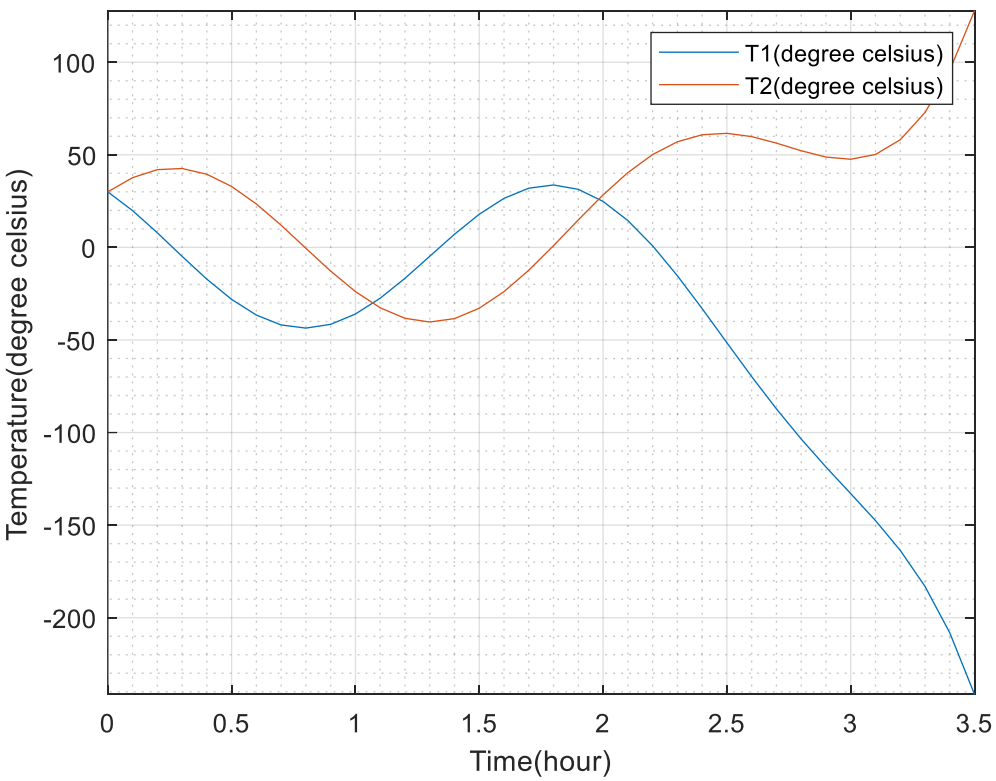
QUESTION 4. (continued line of command from 3)

```
syms t w a k
f = k*exp(-a*t)*cos(w*t)
fs = laplace(f)
pretty(fs)
```

QUESTION 5.

```
syms s pi
f = pi/(s^2+(10*pi*s)+(24*pi^2))
bd = ilaplace(f)
pretty(bd)
```


vibrations
time(min)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
5
10
15
20
25
30
35
40
45
50


T1(degree celsius)
T2(degree celsius)
Temperature(degree celsius)
Time(hour)
100
50
0
-50
-100
-150
-200
0
0.5
1
1.5
2
2.5
3
3.5