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16/ENG01/006

CHEMICAL ENGINEERING

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

```matlab
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

```matlab
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

```matlab
commandwindow
clear
clc
close all
syms a w t k
f(t)=k*exp(-a*t)*cos(w*t)
laplace (f(t))
```

QUESTION 5

```matlab
commandwindow
clear
clc
syms s t pi
lol=ilaplace(pi/((s^2)+(10*pi*s)+(24*pi^2)))
pretty(lol)
```