OGUN MARYANN OKANILEMEN
U/ENG04/057
Electrical Engineering
Engineering Maths (ENG 202)

Initial reading = 10°C
20°C

Actual temp = 25°C

$\frac{dT}{dt} = -K(T - T_m)$

K - Probability constant

$\frac{dT}{dt} + KT = KT_m$

$\frac{dT}{dt} + K10°C = K(25°)$

$\frac{dT}{dt} = K(25 - 10)$

$\frac{dT}{dt} = 15K$

$dT = 15K\,dt$

$\int \frac{dT}{K} = \int 15\,dt$

$\frac{1}{K}\int dT = \int 15\,dt$

$\frac{1}{K}T = 15t$

After 5, T = 20°C

$\frac{1}{K}(20) = 15 \times 5$

$75K = 20$

$K = \frac{20}{75}$

$\frac{75}{20}T = 15t$

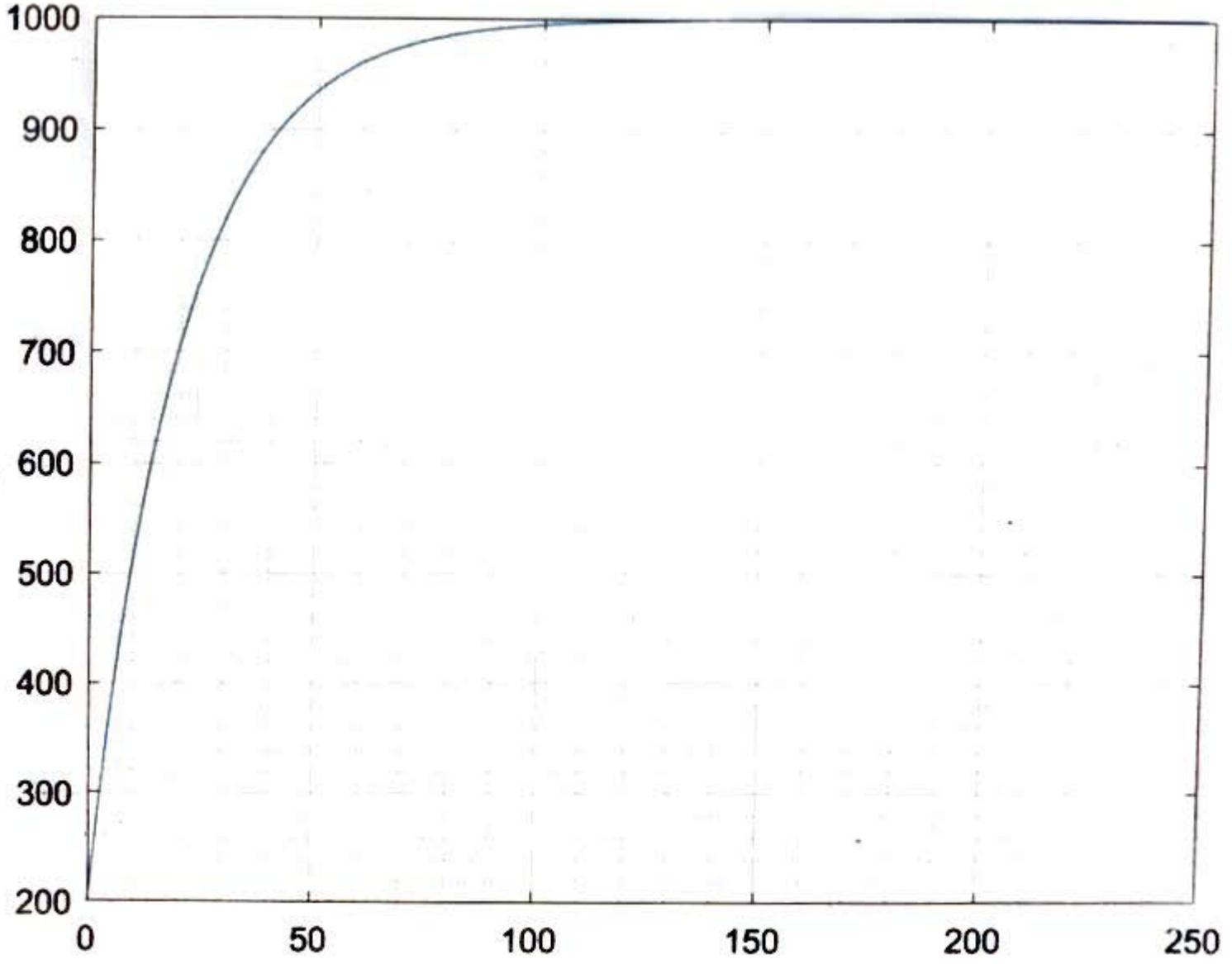
The time required for the reading to practically reach system temp

Take T = 24.9

$\frac{75 \times 24.9}{20} = 15t$

$t = \frac{75 \times 24.1}{20 \times 15}$

$t = 6.22 mins$


1000
900
800
700
600
500
400
300
200
0
50
100
150
200
250

```
commandwindow
clear
clc
close all
format short g
mdata=xlsread('onlinequizdata','fluiddata')
x=mdata(1:2:250,1)
y=mdata(1:2:250,2)
plot(x,y)
grid on
grid minor
```

Command Window

```
    86
    88
    90
    92
    94
    96
    98
   100
   102
```