

## Q.1 code

```

data=load("Q.1.txt","-ascii");
M=data(1,1);b=data(1,2);t=data(1,3);a=data(1,4);
A=a/b;B=(pi*a)/2;
C=sqrt(tan(B)/B)*((0.923+0.199*(1-sin(B))^2)/cos(B));
o=(6*M)/t*b^2;
K=C*o*sqrt(pi*a);
fprintf("The stress intensity factor for a beam that is %.2fm wide and
%.2fm thick with an edge crack of %.2fm and an applied moment of %dN-m is
%d Pa-sqrt(m)\n",b,t,a,M,K);

```

## Q.1 ans

The stress intensity factor for a beam that is 0.25m wide and 0.01m thick with an edge crack of 0.25m and an applied moment of 20N-m is 7.380177e+02 Pa-sqrt(m)

## Q.2 code

```

q2 = xlsread('Q.2.xlsx');
min_col=min(q2)
max_col=max(q2)

```

## Q2.ans

min\_col =

49      39      90

max\_col =

63      51      98

## Q.3 code

```

Q=8000;R=1.987;k0=1200;
T=100:50:500;
k=k0.*exp(-Q./(T.*R));
tableTK(:,1)=T;
tableTK(:,2)=k;

disp('Temperature(K) Rate Constant(1/min)')
disp(' ')
disp(tableTK);

```

## Q3.ans

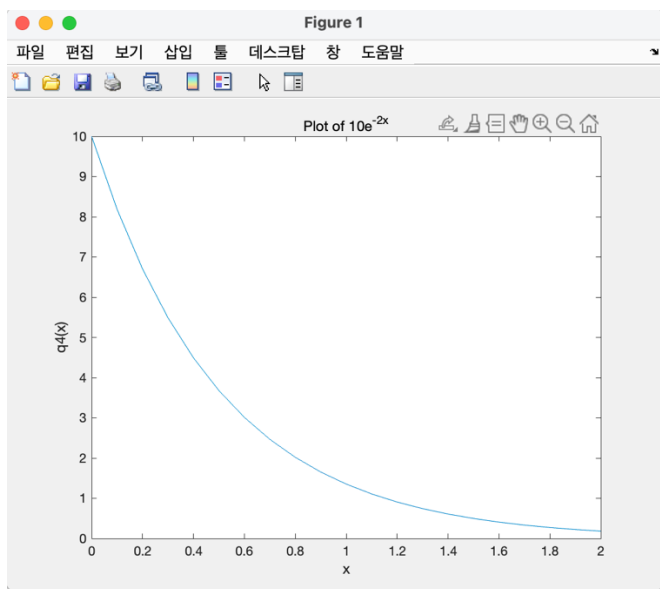
Temperature(K) Rate Constant(1/min)

100.0000	0.0000
150.0000	0.0000
200.0000	0.0000
250.0000	0.0001
300.0000	0.0018
350.0000	0.0121
400.0000	0.0510
450.0000	0.1561
500.0000	0.3820

Q4.code

```
x=0:0.1:2;
q4=@(x)10*exp(-2*x);
q4(x)
```

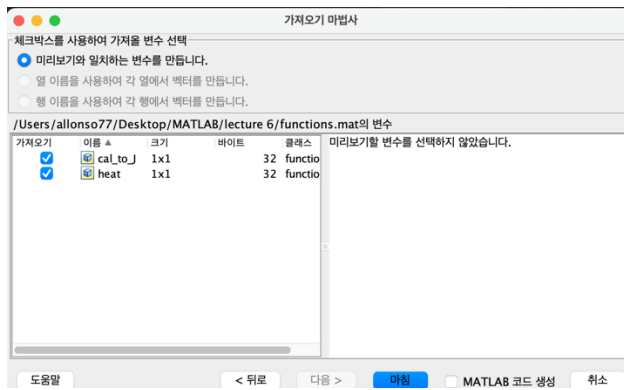
Q4.ans



Q5.code

```
heat=@(w)w;
cal_to_J=@(cal)cal*4.2;
save('functions.mat','cal_to_J','heat');
```

Q5.ans



See attached files