

ME EN 2550

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### Homework 9

1)  $\bar{X}$  control limits:

UCL: 14.603

CL: 14.51

LCL 14.417

S control limits:

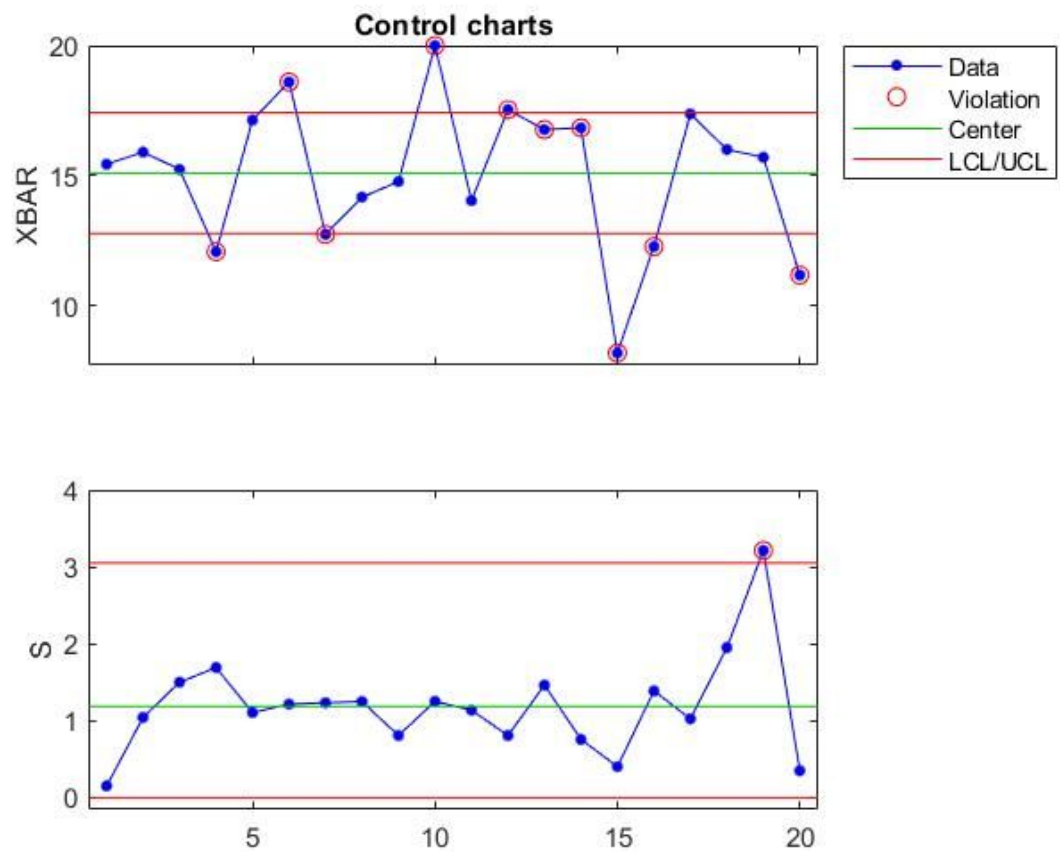
UCL: 0.3041

CL: 0.1456

LCL: 0.0

2)  $n = 5.0$

3)  $\sigma = 2.73$



4)

$\bar{X}$  control limits:

UCL: 17.4151

CL: 15.0933

LCL 12.7715

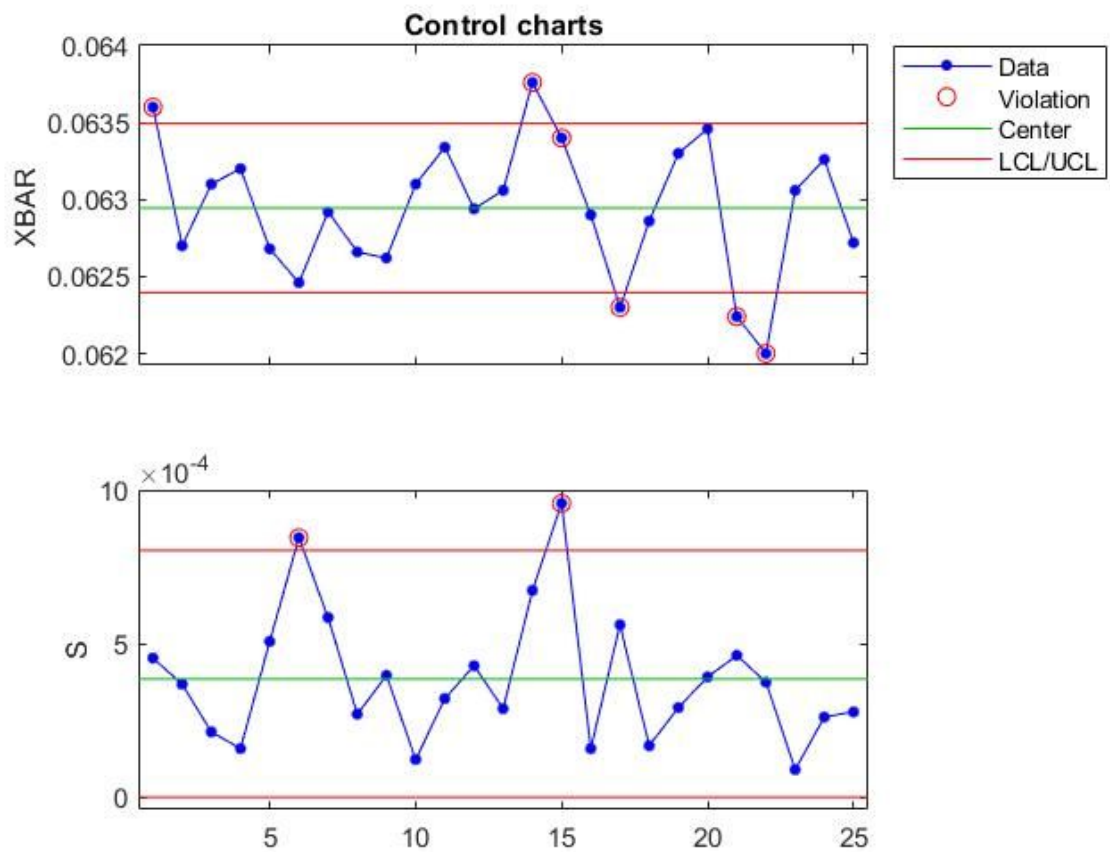
$S$  control limits:

UCL: 3.0509

CL: 1.1880

LCL: 0.0

Out of control points: 4, 6, 7, 12, 15, 16, 19, and 20



5)

$\bar{X}$  control limits:

UCL: 0.0635

CL: 0.0629

LCL: 0.0624

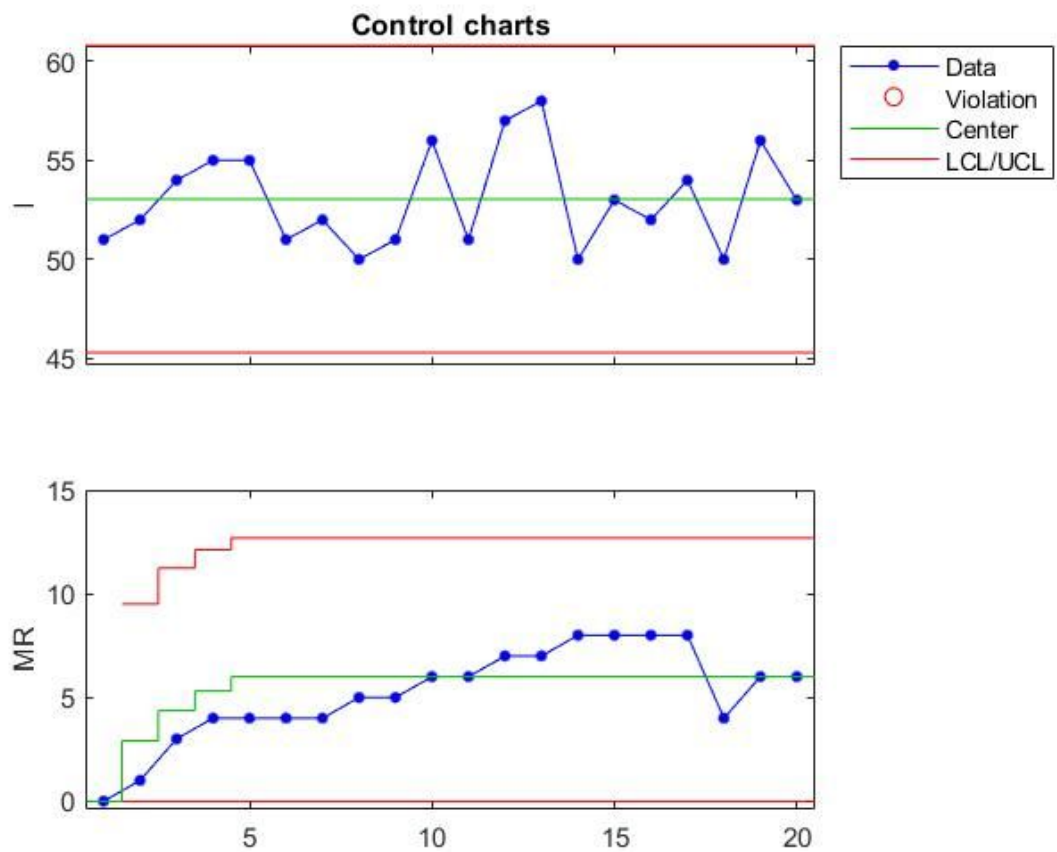
$S$  control limits:

UCL: 0.0008034

CL: 0.0003846

LCL: 0.0

Out of control points: 1, 6, 14, 15, 17, 21, 22



6)

I control limits:

UCL: 60.7888

CL: 53.0500

LCL: 45.3112

MR control limits:

UCL: 12.6870 (9.5082)

CL: 6.00 (2.9108)

LCL: 0.0

This process appears to be in control.

$\mu = 53.05$

$\sigma = 2.613$

Code:

%HW 9

```
p4data = xlsread('HW9Data.xlsx', 'Problem4');
```

```
p5data = xlsread('HW9Data.xlsx', 'Problem5');
```

```
p6data = xlsread('HW9Data.xlsx', 'Problem6');
```

```
fprintf('Problem 4:')
```

```
data = p4data(:,2:4);
```

```
[st4 ,plotdata4] = controlchart(data,'charttype',{'xbar' 's'}, 'rules', 'we2');
```

```
plotdata4.lcl
```

```
plotdata4.cl
```

```
plotdata4.ucl
```

```
R4 = controlrules('we2',st4.mean,st4.mu,st4.sigma./sqrt(st4.n));
```

```
figure();
```

```
fprintf('Problem 5:')
```

```
data = p5data(:,2:6);
```

```
[st5, plotdata5] = controlchart(data,'charttype',{'xbar' 's'}, 'rules', 'we2');
```

```
plotdata5.lcl
```

```
plotdata5.cl
```

```
plotdata5.ucl
```

```
R5 = controlrules('we2',st5.mean,st5.mu,st5.sigma./sqrt(st5.n));
```

```
figure();
```

```
fprintf('Problem 6:')
```

```
[st6, plotdata6] = controlchart(p6data(:,2),'charttype',{'i', 'mr'}, 'rules', 'we2');
```

```
plotdata6.lcl
```

```
plotdata6.cl
```

```
plotdata6.ucl
```