Problem 17-45

Given the following table:

Sample	Number of Errors	Sample	Number of Errors
1	0	21	1
2	0	22	0
3	3	23	1
4	0	24	1
5	1	25	0
6	0	26	1
7	0	27	0
8	2	28	1
9	1	29	3
10	1	30	0
11	0	31	1
12	3	32	1
13	0	33	1
14	0	34	0
15	1	35	1
16	0	36	0
17	0	37	2
18	1	38	0
19	0	39	2
20	0	40	1

Using the excel template, we have:

Average (c-bar)	0.75			
Standard deviation	0.866025404			

| Unit	Number of Nonconformances	LCLc	CL	UCLc
1	0	0	0.75	3.3481
2	0	0	0.75	3.3481
3	3	0	0.75	3.3481
4	0	0	0.75	3.3481
5	1	0	0.75	3.3481
6	0	0	0.75	3.3481
7	0	0	0.75	3.3481
8	2	0	0.75	3.3481
9	1	0	0.75	3.3481
10	1	0	0.75	3.3481
11	0	0	0.75	3.3481
12	3	0	0.75	3.3481
13	0	0	0.75	3.3481
14	0	0	0.75	3.3481
15	1	0	0.75	3.3481
16	0	0	0.75	3.3481
17	0	0	0.75	3.3481
18	1	0	0.75	3.3481
19	0	0	0.75	3.3481
20	0	0	0.75	3.3481
21	1	0	0.75	3.3481
22	0	0	0.75	3.3481
23	1	0	0.75	3.3481
24	1	0	0.75	3.3481
25	0	0	0.75	3.3481
26	1	0	0.75	3.3481
27	0	0	0.75	3.3481
28	1	0	0.75	3.3481
29	3	0	0.75	3.3481
30	0	0	0.75	3.3481
31	1	0	0.75	3.3481
32	1	0	0.75	3.3481
33	1	0	0.75	3.3481
34	0	0	0.75	3.3481
35	1	0	0.75	3.3481
36	0	0	0.75	3.3481
37	2	0	0.75	3.3481
38	0	0	0.75	3.3481
39	2	0	0.75	3.3481
40	1	0	0.75	3.3481

From this, we can see that:

$$\mu = 0.75$$

$$LCL_C = 3.348$$

$$LCL_C = 0$$

From the graph:
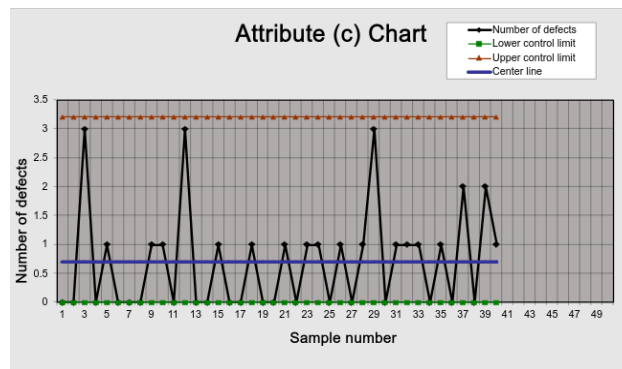
We can see that selection (d) is the right choice. We can also see from the graph that the process appears to be in control.