

# Final Exam: Due Tues 12/17 by 2:45pm ET

● Graded

Student

Ivan Wang

Total Points

41 / 100 pts

Question 1

Problem 1

10 / 15 pts

✓ - 3 pts need a one-sided CI, gave a two-sided one

✓ - 2 pts (i) using a two-sided alternative hypothesis, whereas the test should be one-sided. (ii) conclusion is incorrect based on hypotheses and context.

Question 2

Problem 2

8 / 25 pts

✓ - 17 pts This one did not go well for you as there were many significant errors -- (i) Minitab charts are incorrect. (ii) interpreting "prob of meeting specs" (deals with distribution of  $\bar{X}$ ) as "how many sample means are outside control limits" (which sort of deals with distribution of  $\bar{X}$ , but you're basing it just on the observed sample points). (iii) no progress on  $\alpha$ -risk or ARL. (iv) several errors in computing the capability ratios. (v) reason for why to use  $C_p$  over  $C_{pk}$  is incorrect. (vi) many errors in calculation of  $\beta$ -risk and ARL.

Question 3

Problem 3

8 / 15 pts

✓ - 2 pts should not be making/including charts for "can/sample", only volume.

✓ - 5 pts you are computing proportion of sample values that are less than 20. Need proportion of *all cans* whose volumes we'd expect to be less than 20. Based on context, we are interested in the amount of scrap produced by the process, not the amount of scrap in one particular sample. In other words, need to compute  $P(X < 20)$  using the distribution of  $X$ .

Question 4

Problem 4

9 / 15 pts

✓ - 2 pts using  $n = 20$ , but should be  $n = 15$

✓ - 2 pts in Minitab  $c$ -chart, using  $L = 3$  instead of  $L = 2.8$ . Also should not make or include a  $c$ -chart for "week/sample".

✓ - 2 pts in Minitab  $u$ -chart, using  $L = 3$  instead of  $L = 2.8$ . Also should not make or include a  $u$ -chart for "week/sample". Also, as noted above, you're using  $n = 20$  instead of  $n = 15$  when making the chart.

### Question 5

#### Problem 5

0 / 10 pts

- ✓ - 10 pts (i) chart in part (a) is (very) incorrect, (ii) estimated st dev in part (b) is incorrect and no supporting work, (iii) no progress in part (c), just copied the formulas from the formula sheet.

### Question 6

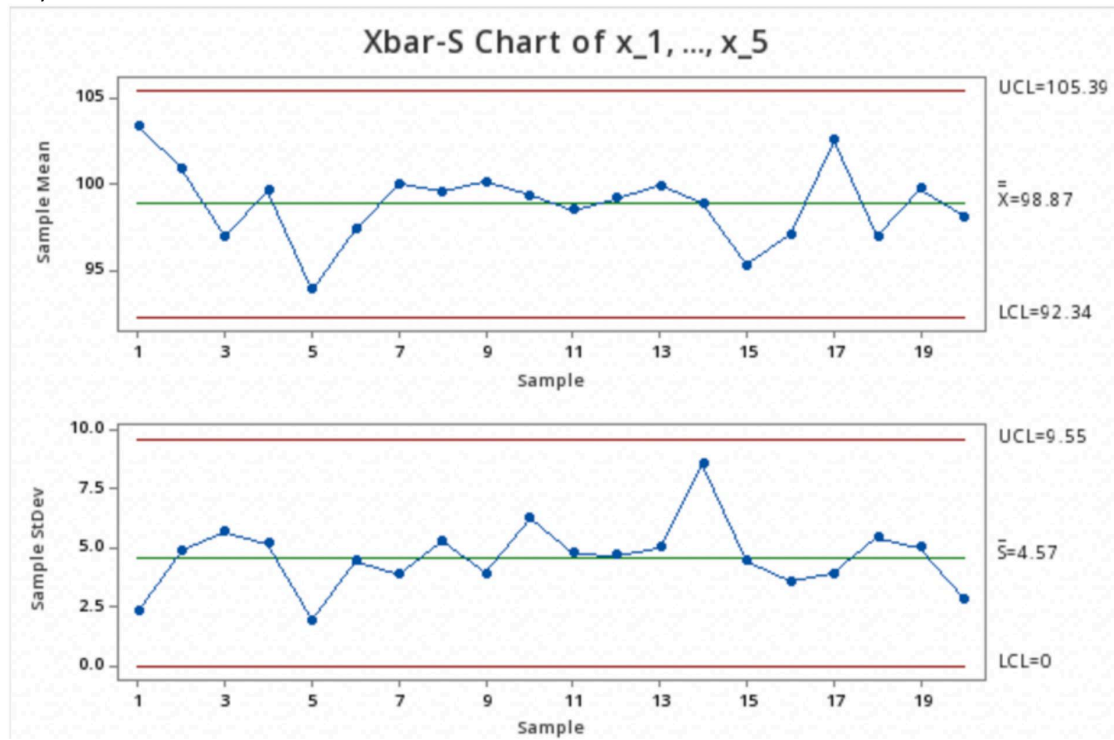
#### Problem 6

6 / 20 pts

- ✓ - 14 pts (i) using wrong value of  $d_2$  when computing  $\hat{\sigma}$ . (ii) when making EWMA-chart in Minitab, not using the target value  $\mu_0$ , using wrong values of  $\lambda$  and  $L$ . (iii) parts (c) and (d) not submitted. (iv) when making MA-chart in Minitab, not using the target value  $\mu_0$ , using wrong value of  $L$ . (v) error in calculation of  $M_6$  (using  $w = 5$  rather than  $w = 4$ ).

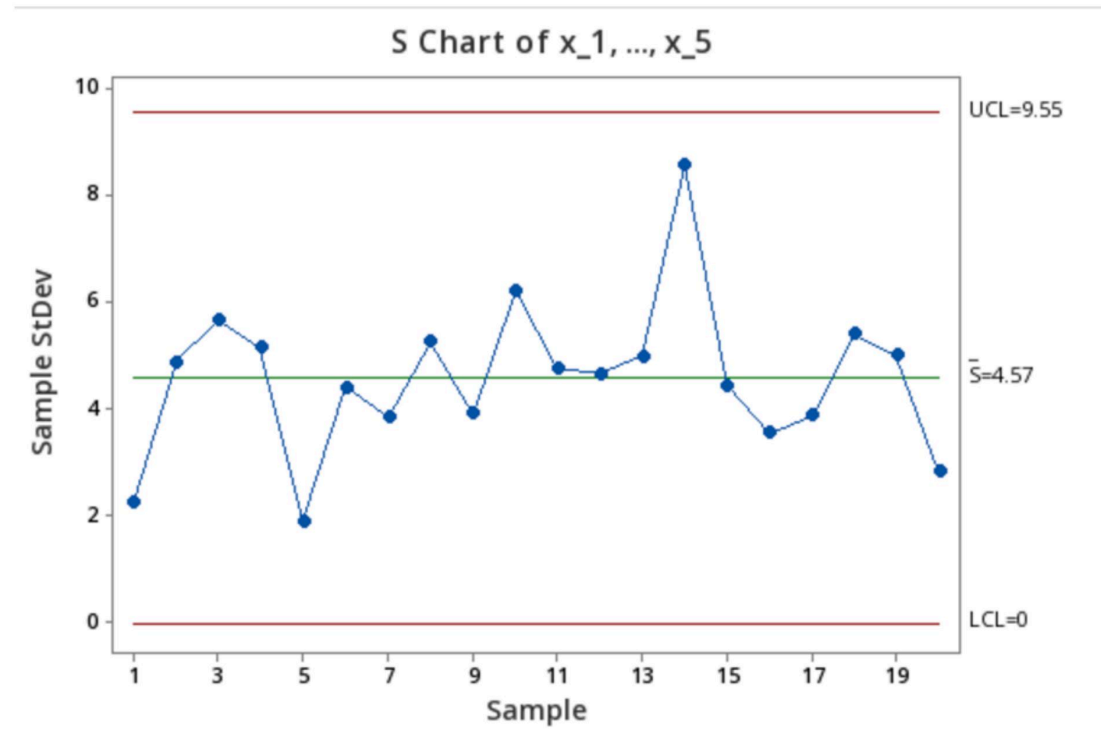
Question assigned to the following page: [2](#)

2b)

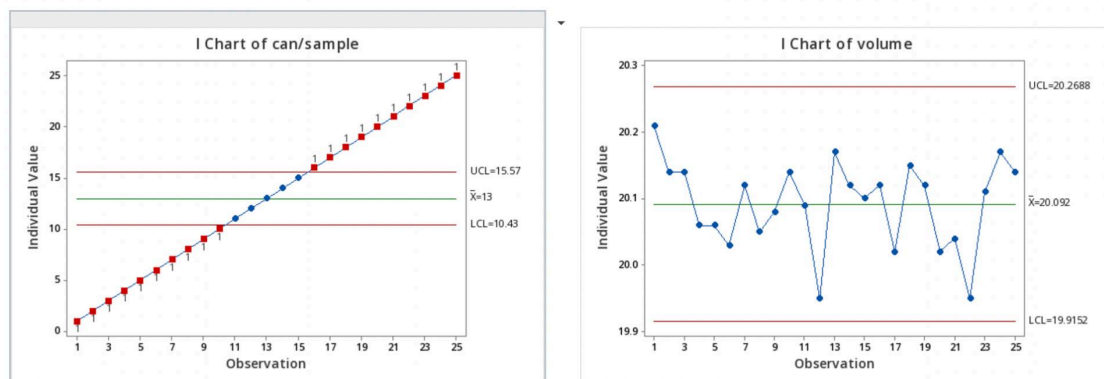


Questions assigned to the following page: [2](#) and [3](#)

2c)

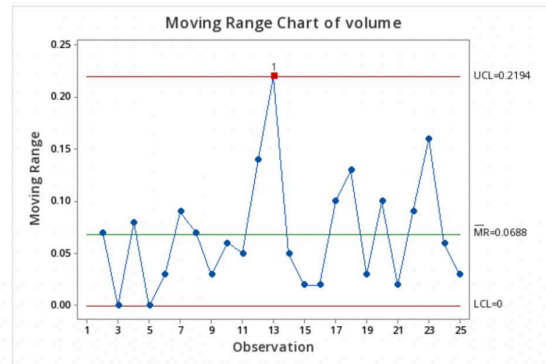
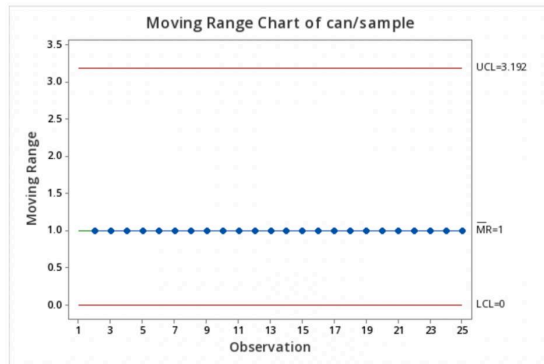


3a)

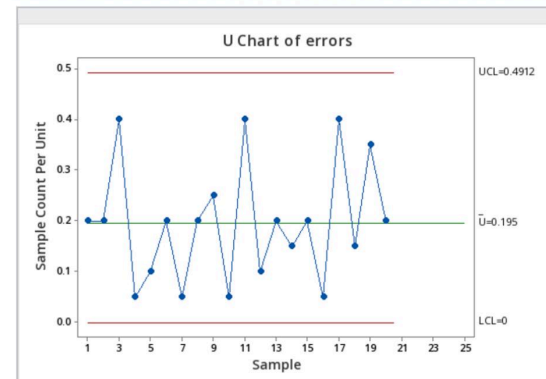
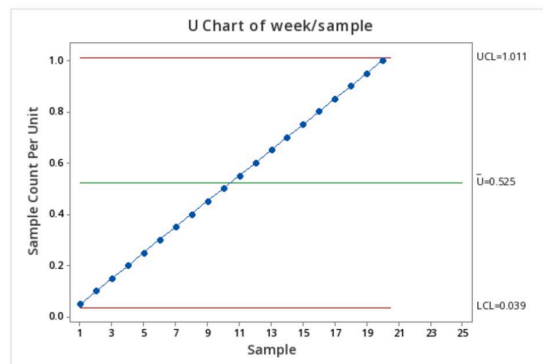
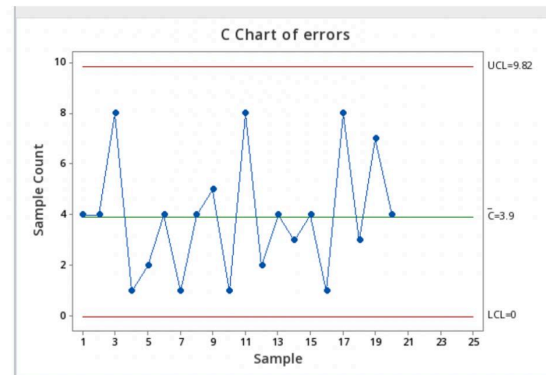
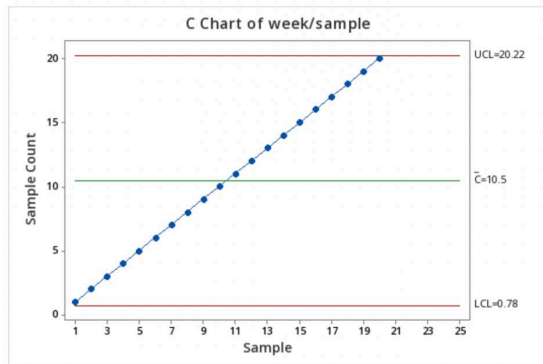


Questions assigned to the following page: [3](#) and [4](#)

3b)



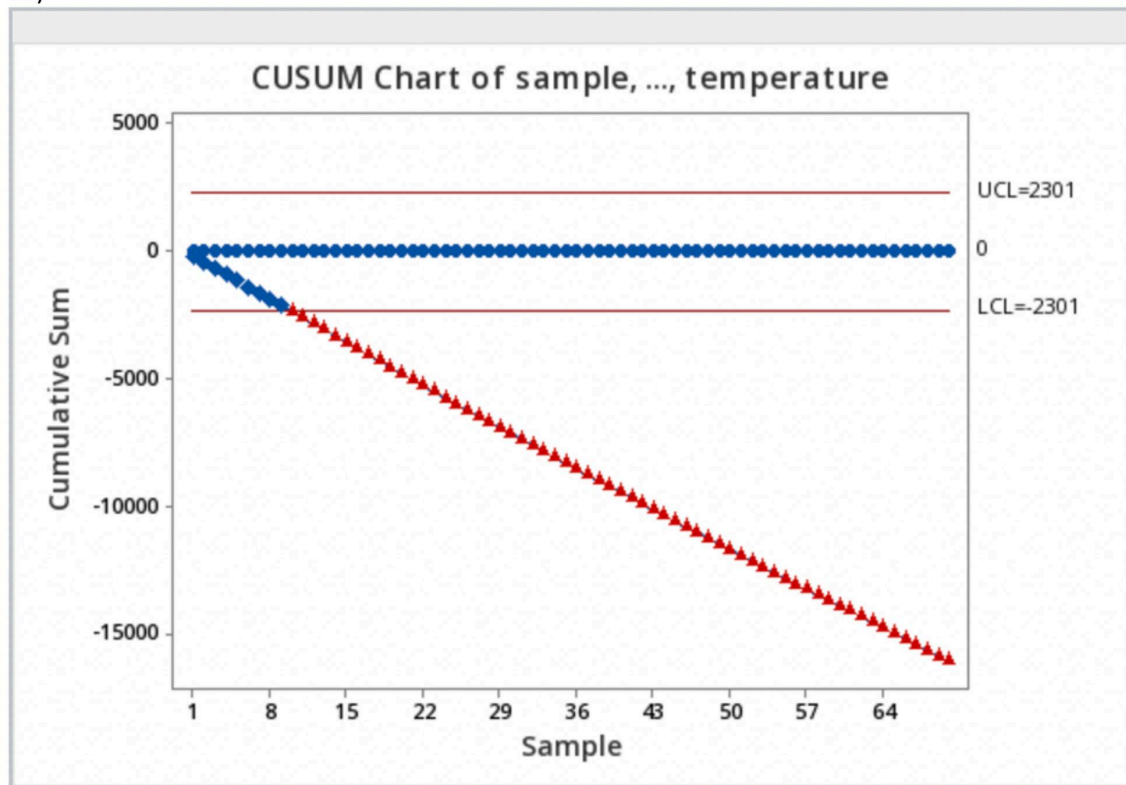
4c)





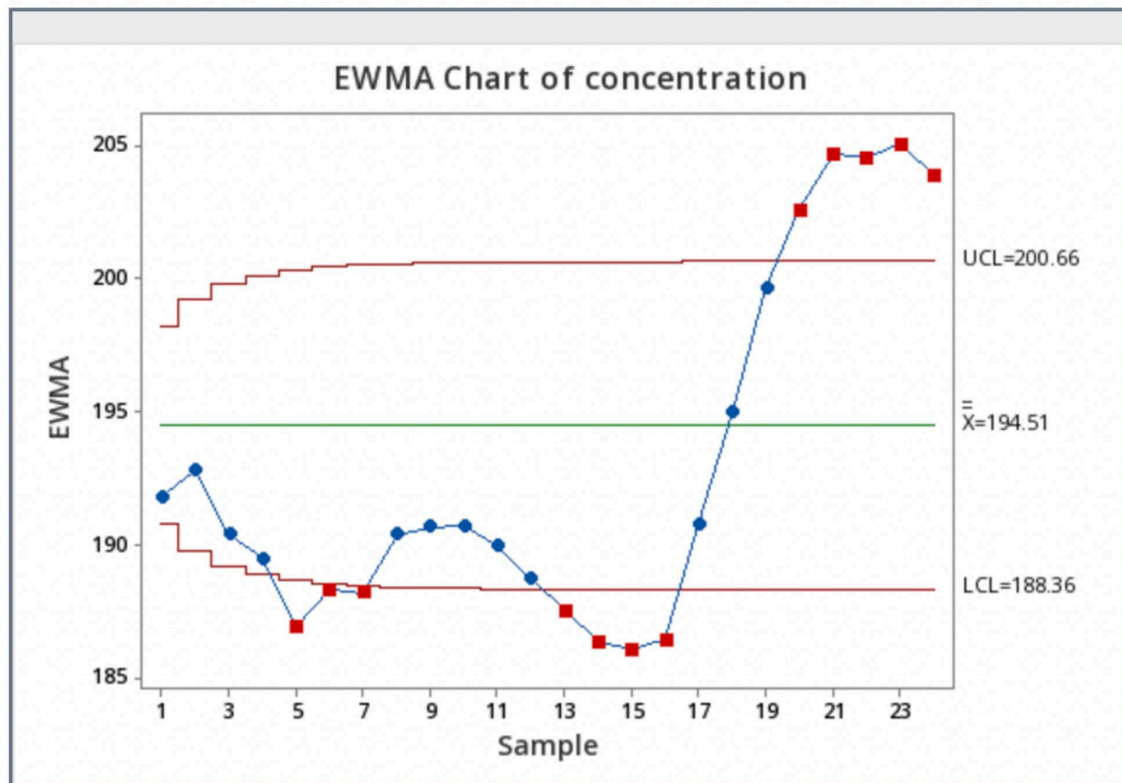
Question assigned to the following page: [5](#)

5a)



Question assigned to the following page: [6](#)

6b)



Question assigned to the following page: [6](#)

6e)

