

Date: _____

Quiz 2

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15 sample from 5

g) Original 15 samples.

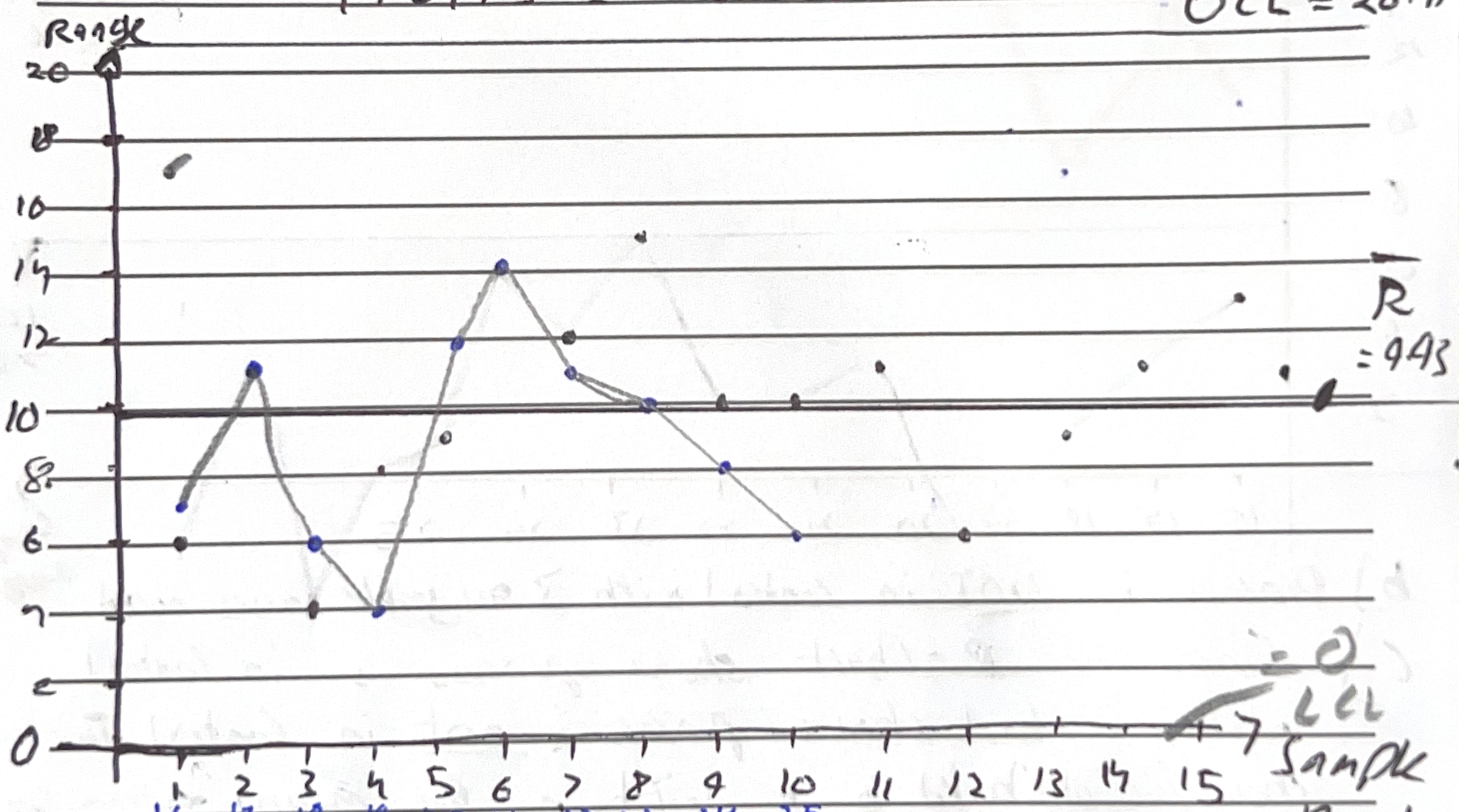
$$\bar{R} = (6 + 11 + 4 + 8 + 4 + 14, 12 + 15 + 10 + 10 + 11 + 6 + 9 + 11 + 13) \div 15$$

$$\bar{x} = (17 + 14, 8 + 17 + 12 + 13 + 15, 16 + 13 + 14 + 16 + 9 + 11 + 9 + 12) \div 15$$

$$\bar{R} = 149 / 15 = 9.933$$

$$\bar{x} = 196 / 15 = 13.067$$

$$UCL = 20.47$$



$$R\text{-Chart } UCL = D_4 \times 9.933$$

$$LCL = D_3 \times 9.933$$

$$= 0.347$$

Note: Part b values

are plotted in black with
sample number written bottom

$$CCL = 0 \times 9.933 = 0$$

$$UCL = 2.114 \times 9.933 = 20.99$$

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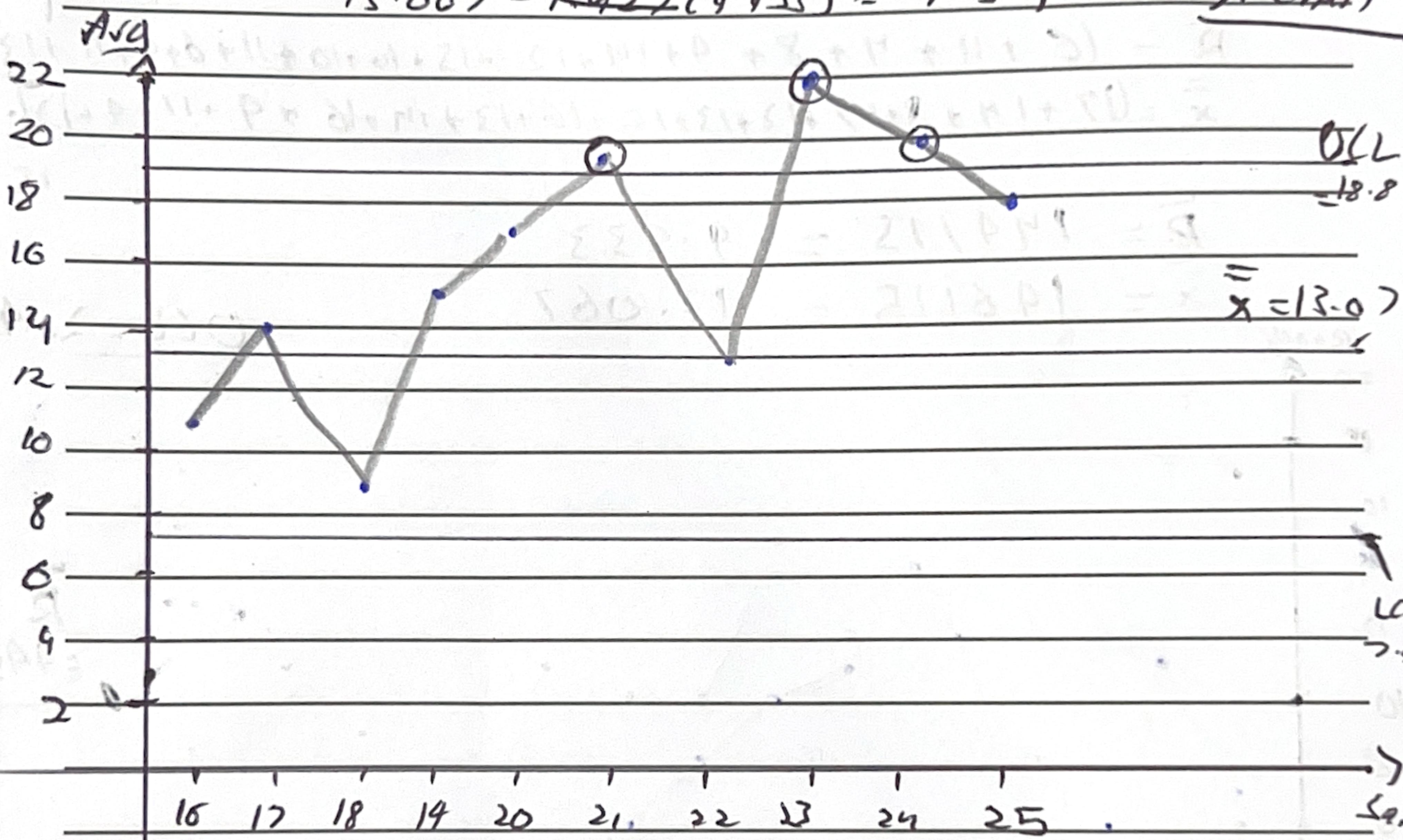
$$\bar{X} = 13.067$$

$$UCL = \bar{X} + A_2 \bar{R} = 18.8$$

$$LCL = \bar{X} - A_2 \bar{R} = 7.34$$

$$\text{ie } 13.067 + \frac{0.572}{\cancel{2}} (0.933) = 18.8$$

$$13.067 - \frac{0.572}{\cancel{2}} (0.133) = 7.34$$

 \bar{X} Chart

- b) Process is NOT in control with 3 assignable causes marked
- c) Since the \bar{R} -chart shows process is in control while \bar{X} chart shows process is not in control. This shows/is attributed to a drift in the mean; ~~is showing~~ the central tendency has moved upwards since the assignable causes lie above the Upper Control Limit. Since R chart is in control there is no issue of variability.