Hussain Ather

Post-lab questions for Iron percent determination

1. (a) .04335 L K2Cr2O7 = .154 g Fe

.154 g Fe / .4179 g sample = 37.0 % Fe

(b) .4719 g sample (.37 Fe) g =.04896 L K2Cr2O7

2.

Average and Std Dev of each Sample

|  |  |  |
| --- | --- | --- |
| Sample | Avg | Std Dev |
| 1 (C) | 46 | 2.1 |
| 2 (A) | 39 | 2.1 |
| 3 (D) | 55 | 2.9 |
| 4 (E) | 38 | 2.6 |
| 5 (B) | 50 | 3.5 |

Difference between individual sample and average of the results for each sample (Nx)

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Sample | A | Ax | B | Bx | C | Cx | D | Dx | E | Ex |
|  | 37 | -2 | 46 | -4 | 44 | -2 | 51 | -4 | 35 | -3 |
|  | 38 | -1 | 49 | -3 | 47 | -1 | 55 | 0 | 37 | -1 |
|  | 39 | 0 | 52 | 2 | 48 | 2 | 56 | 1 | 39 | 1 |
|  | 41 | 2 | 54 | 4 |  |  | 58 | 3 | 41 | 3 |
|  | 42 | 3 |  |  |  |  |  |  |  |  |

3.

CL= 🡪 CL(gravimetric)== (45.97, 46.09)

CL(volumetric)==(46.13, 46.25)

CL= 🡪 CL(gravimetric)== (45.95, 46.11)

CL(volumetric)==(46.06, 46.32)

With a z-test, there is no significant difference since the confidence intervals do not overlap at 95% CL. With a t-test, there is a significant difference since the intervals overlap at 95% CL.

4.

For titrant volume

Vf-Vi = 8.82-.23 mL = 8.58 mL

sv2= s2f+ s2i= .0013 mL

(sx/x)=((sv/v)2 + (sm/m)2)^(1/2)=.0079