Round each result to include only significant figures.

1. Define (20%)
   (a) stoichiometry.
   (b) electrolyte.
   (c) ligand.
   (d) oxidation.

2. The base B has $pK_b = 5.00$.
   (a) At what pH is $[BH^+] = [B]?$ (5%)  
   (b) What is the quotient $[B]/[BH^+]$ at pH 12.00? (5%)  

3. How many milliliters of 0.0500 M EDTA are required to react with 50.0mL of 0.100 M Al$^{3+}$? (10%)  

4. The hydrogen sulfide (H$_2$S, 34.08 g/mol) in a 50.0-g sample of crude petroleum was removed by distillation and collected in a solution of CdCl$_2$. The precipitated CdS(144.476 g/mol) was then filtered, washed, and ignited to CdSO$_4$ (208.47 g/mol). Calculate the percentage of H$_2$S in the sample if 0.108 g of CdSO$_4$ was recovered. (10%)  

5. What is the difference of equivalent point and end point? (10%)  

6. What is the difference of precision and accuracy? (10%)  

7. What is the difference of absolute uncertainty and relative uncertainty? (10%)  

8. How to prepare a buffer solution? (10%)  

9. Calculate the average value $\bar{x}$ and standard deviation $S$ of following experimental data, 34.5, 33.2, 35.6, 32.7, 33.5. (10 %)

$$S = \sqrt{\frac{\sum_{i=1}^{n}(x_i - \bar{x})^2}{n-1}}$$

$S$: standard deviation, $n$: number of observation, $x_i$: individual observation.