1. The following results were obtained in the replicate analysis of a blood sample for its lead content: 0.752, 0.756, 0.752, 0.751, and 0.760 ppm Pb. Calculate (a) mean (b) standard deviation (c) relative standard deviation. (10%)

2. What is the molarity of K\(^+\) in an aqueous solution that contains 63.3 ppm of K\(_3\)Fe(CN)\(_6\) (329.2 g/mol)? (10%)

3. Calculate the molar solubility of Ba(IO\(_3\))\(_2\) in a solution that is 0.02 M in Ba(NO\(_3\))\(_2\). K\(_{sp}\) for Ba(IO\(_3\))\(_2\) is 1.57*10\(^{-9}\). (10%)

4. What is a buffer solution and what are its properties? (10%)

5. Calculate the pH of the solution during the titration of 50 mL of 0.05 M NaCl with 0.1 M AgNO\(_3\) after addition of the following volumes of reagent: (a) 24 mL (b) 25 mL. (10%)

6. Calculate the energy of a 530-nm photon of visible radiation. (10%)
   \[ E = \frac{hc}{\lambda} \]  
   \( h = 6.63 \times 10^{-34} \text{ J} \cdot \text{s}; c = 3.00 \times 10^8 \text{ m/s} \)

7. Why are atomic emission methods with an inductively coupled plasma source better suited for multielement analysis than are flame atomic absorption methods? (10%)

8. A solution containing the complex formed between Bi(III) and thiourea has a molar absorptivity 9.32 \times 10^3 \text{ L cm}^{-1} \text{ at 470 nm.} What is the absorbance of a 6.24 \times 10^{-5} \text{ M solution of the complex at 470 nm in a 1.00-cm cell?} (A = \varepsilon bc) (10%)
9. What is the wavenumber (cm\(^{-1}\)) region of mid-infrared? (10%) 

10. Which one is not separation method? (select one) (10%) 
   (A) HPLC  (B) GC  (C) NMR  (D) CE  (E) SFC