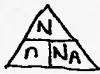



Part 1: Fill in the Blank (20 marks)

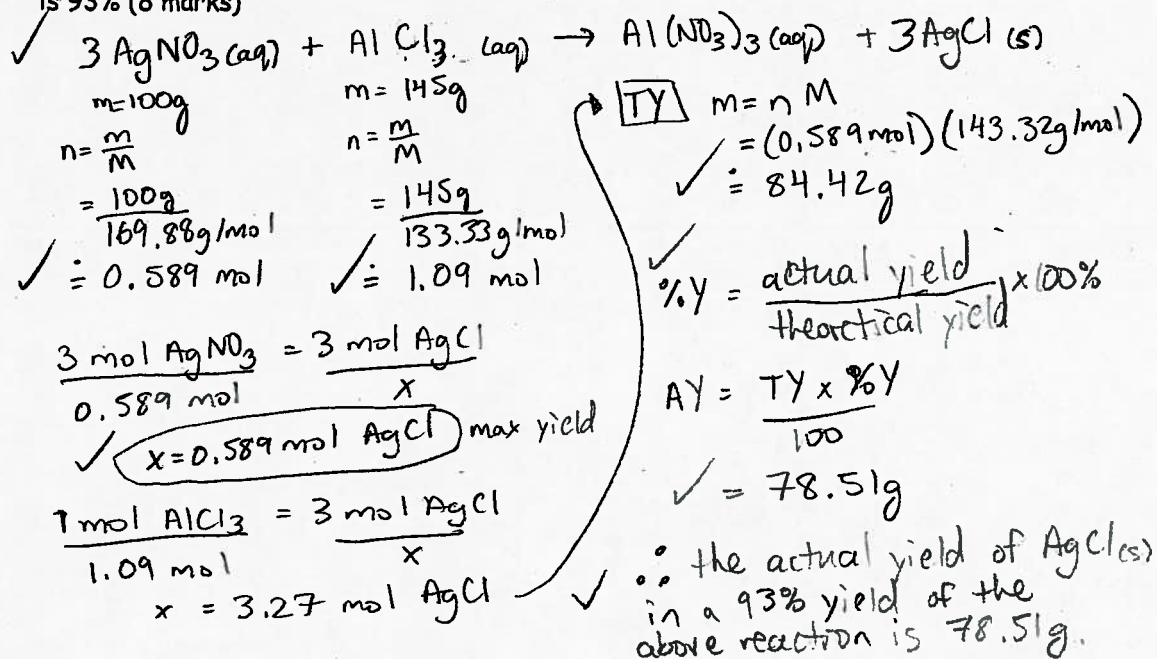
Write the correct answer in the space provided including units where appropriate. No rough work needs to be shown.

- 0.3 mol = 1.81×10^{23} atoms  $N = n N_A$
- The molar mass of $\text{CH}_3(\text{CH}_2)_5\text{NH}_2$ = 102.23 g/mol $\frac{C}{6(12.01)} + \frac{H}{16(1.01)} + \frac{N}{14.01}$
- The chemical formula for potassium bromate is KBrO_3
- How many valence electrons does magnesium have? 2
- What are the products of incomplete combustion? $\text{C(s)}, \text{CO(g)}, \text{CO}_2(\text{g}), \text{H}_2\text{O}(\text{g})$
- Name the following using the Roman Numeral method, MnO_2 + 4
- Write the chemical formula for strontium carbonate SrCO_3
- How many moles are in 19 g of silver? 0.176 mol 
- Determine the concentration of a solution with 2.35 mol of potassium fluoride 4.7 M
 $m/v \% = \frac{\text{mass of solute (g)}}{\text{volume of solution (ml)}} \times 100\%$ $v = 0.5 \text{ L}$
- What is the mass of the solute if m/v% is 15.3% in a 250 ml solution? 38.25 g
- Determine the ΔEN value for a S-O bond 0.86
 $PV = nRT$, STP: $P = 101.3 \text{ kPa}$, $T = 273 \text{ K}$, $R = 8.314$
- Determine the number of moles of a gas that occupies 28 L at STP $n = 1.25 \text{ mol}$
- How many electrons does Cl^- have? $18 e^-$
- What is the chemical formula for sulphur trioxide? SO_3
- What is the charge for iron in the following formula, FePO_4 ? $+2$
- Write the chemical formula of the products for the following reaction:
 $\overset{1.65}{\text{zinc}} + \overset{1.90}{\text{copper oxide}} \rightarrow \text{ZnO} + \text{Cu}$
- Write the chemical formula of the products for the following reaction:
 $2\text{NH}_4\text{OH} + \text{H}_2\text{SO}_4 \rightarrow (\text{NH}_4)_2\text{SO}_4 + 2\text{H}_2\text{O}(\text{l})$
- What are the trends for ionization energy on the periodic table? $\text{I.E. decreases} \downarrow \text{group}$
 $\text{I.E. increases} \rightarrow \text{period}$
- Rank the following elements in order of increasing atomic radius, K, Mg, Li, Cs $\text{smallest to biggest}$ Li, Mg, K, Cs
- A net ionic equation does not include spectator ions.

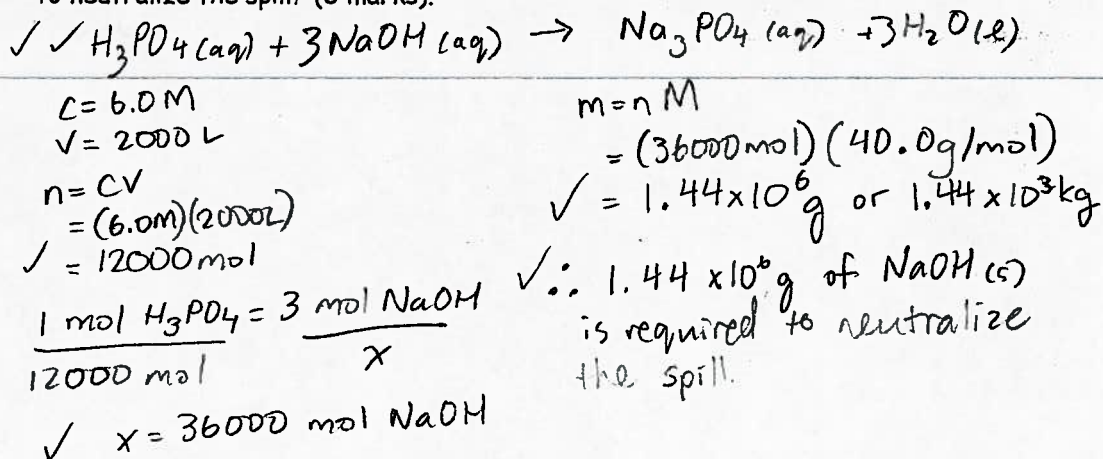
Part 2: Short Answer (20 marks)

Answer the questions in the space provided. Show ALL work in order to receive full marks. Remember to include units!

21. If 100 g of silver nitrate reacts with 145 g of aluminum chloride to produce aluminum nitrate and silver chloride, calculate the actual yield if the percent yield of the reaction is 93% (8 marks)



22. A tanker car containing phosphoric acid (H_3PO_4), with a concentration of 6.0 M derails and spills 2000L. What mass of solid sodium hydroxide is required by the clean up crew to neutralize the spill? (6 marks).



23. When ammonia gas reacts with oxygen, water and nitrogen monoxide are formed. All substances are in the gaseous state. What volume of ammonia measured at 400 K and 95 kPa would be required to produce 50.0 g of water? (6 marks).

