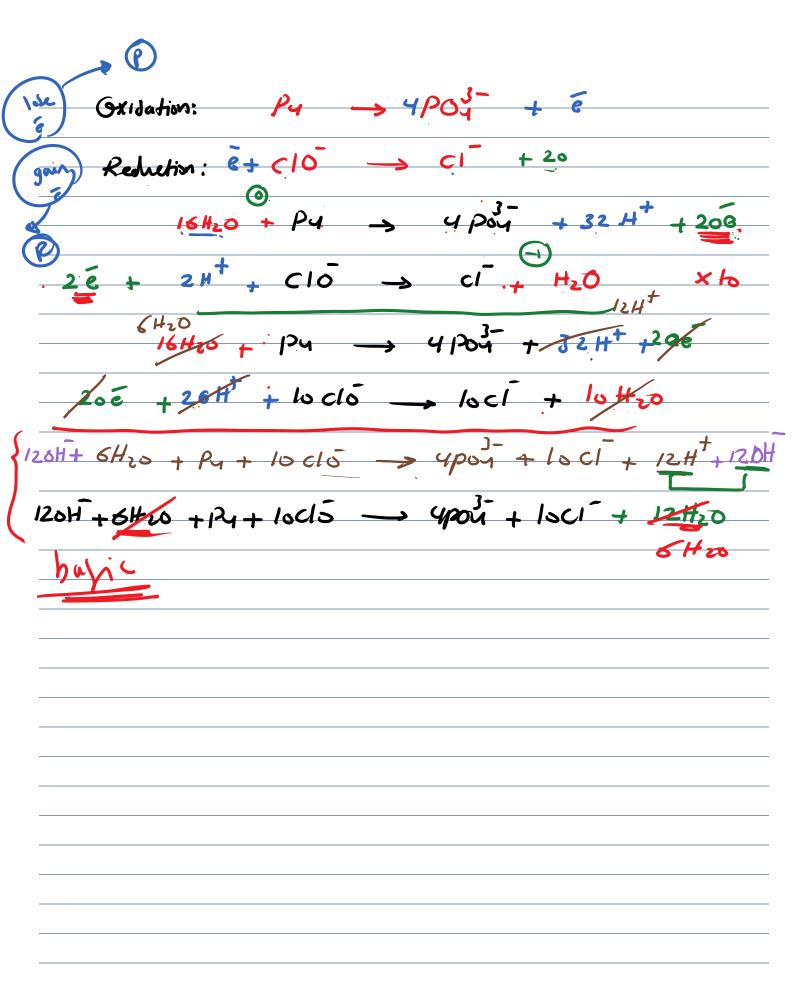


| 7) Given the following reaction: | 7) |
|--|------------------|
| $P_{4(s)} + CIO^{-}(aq) \rightarrow PO_{4}^{3}(aq) + CI^{-}(aq)$ | |
| a) balance the equation for redox reaction in acidic solution by showing oxidation states, indicating reduced and oxidized species, showing half-reactions and necessary steps. b) Suppose that the reaction occurs in basic solution, based on your answer in part a, show the | |
| balanced equation of the redox reaction in one step. | |
| [] Oxigating _ increase in Oxidation no. | |
| Reduction - decreent in oxidation no. | |
| (Tam) & Fixed O.N | |
| 12y Cl. No Fe & free element (49p1 = +1 | ı ⁾ u |
| * while company (0.N) Li, Na, 1c, Rb, C, | |
| 410:3 , CS1:4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | 42 |
| Nucl:0 Be, SV, MJ, Ca, Ra, Ba | |
| +1 = Nat charge & A1 = +3 | |
| -3 = 9 | |
| -3-1 2-504 CA=+L | |
| W = -1× | |
| metal = 0 = -2 | |
| My Mix 0 1 = +1 | |
| | |
| $P_{y} = 0$ | * 194 |
| clo = -1 -> cl+0=-1 -> cl-2=1 [cl=+1] | clo |
| PDY = -3 -> P+40 = -3 -> P+4(-2)=-3 P=+8-]=+5 | Po |

* (CI = -1)



| 8) | a) What is the partial pressure of $F_{2(g)}$, in mmHg, at 25.0°C and 12.0 atm in a gaseous mixture that consists of 18.5% He, 57.9% Kr, and 23.6% F_2 , by mass? |
|----|--|
| | b) At what temperature will urms for $He_{(g)}$ be the same as urms for $Kr_{(g)}$ at 25.0°C? |
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9) Consider a gas mixture that has the following composition:

| Gas | CH ₄ | CO ₂ | N ₂ | H ₂ | O ₂ |
|---------------------|-----------------|-----------------|----------------|----------------|----------------|
| Pressure percentage | 14.1% | 1.50% | 10.3% | 32.7% | 41.40% |

| a) W | hat is the dens | ity of this ga | s at 5.0°C and | 792 mmHg. | in grams per liter? |
|------------------------|-----------------|----------------|----------------|-----------|---------------------|
|------------------------|-----------------|----------------|----------------|-----------|---------------------|

| a) b) | What is the density of this gas at 5.0°C and 792 mmHg, in grams per liter? What is the partial pressure of N₂ in the mixture at 15.0°C and 1.45 atm? |
|----------|--|
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| 10) Hydrocarbons are organic compounds consisting of hydrogen and carbon only. Burning hydrocarbons in the presence of oxygen, O ₂ , produces carbon dioxide, CO ₂ , and water, H ₂ O. Methane, CH ₄ , is a hydrocarbon used primarily as fuel to make heat and light. The overall reaction of a number of such steps of methane gas is: |
|---|
| $CH_4(q) + O_2(q) + NO_2(q) \rightarrow CO_2(q) + H_2O_2(q) + NO_2(q) + OH_2(q)$ |
| Suppose that 3.92 L of methane at STP, 10.8 L of oxygen at STP, and 8.3 L of nitrogen monoxide at STP were combined in a 7.0 L flask. The reaction is allowed the stand for several weeks at 275 K. If the reaction reaches 79.5% of completion, what is the total pressure in the flask? What is the partial pressure of $CH_{4(g)}$ and $H_2O_{(g)}$ in the flask? |
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