

CHM 151LL
STUDY GUIDE KEY
MAJOR QUIZ 2

1. Balance and classify the following reactions as combination, decomposition, single replacement, double replacement, or combustion;

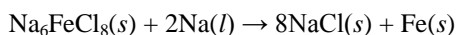
- A) $2\text{C}_4\text{H}_{10(l)} + 13\text{O}_{2(g)} \rightarrow 8\text{CO}_{2(g)} + 10\text{H}_2\text{O}_{(g)}$ **combustion**
- B) $\text{P}_2\text{O}_{5(l)} + 3\text{H}_2\text{O}_{(l)} \rightarrow 2\text{H}_3\text{PO}_{4(aq)}$ **combination**
- C) $2\text{Al}(\text{ClO}_3)_{3(s)} \rightarrow 2\text{AlCl}_{3(s)} + 9\text{O}_{2(g)}$ **decomposition**
- D) $\text{Br}_{2(l)} + \text{ZnI}_{2(s)} \rightarrow \text{ZnBr}_{2(s)} + \text{I}_{2(s)}$ **single-replacement (balanced)**
- E) $\text{NaI}_{(aq)} + \text{Pb}(\text{NO}_3)_{2(aq)} \rightarrow \text{PbI}_{2(s)} + \text{NaNO}_{3(aq)}$ **double-replacement**

2. Complete and balance the following reactions:

- A) $\text{(NH}_4)_3\text{PO}_{4(aq)} + 3\text{KNO}_{3(aq)} \rightarrow \text{K}_3\text{PO}_{4(aq)} + 3\text{NH}_4\text{NO}_{3(aq)}$
- B) $3\text{Ag}_{(s)} + \text{Al}(\text{NO}_3)_{3(aq)} \rightarrow 3\text{AgNO}_{3(aq)} + \text{Al}_{(s)}$
- C) $2\text{C}_3\text{H}_7\text{OH}_{(l)} + 9\text{O}_{2(g)} \rightarrow 6\text{CO}_{2(g)} + 8\text{H}_2\text{O}_{(g)}$
- D) $\text{Cl}_{2(g)} + \text{CaBr}_{2(aq)} \rightarrow \text{CaCl}_{2(aq)} + \text{Br}_{2(l)}$ (balanced)
- E) $\text{H}_3\text{AsO}_{4(aq)} + 3\text{NaOH}_{(aq)} \rightarrow \text{Na}_3\text{AsO}_{4(aq)} + 3\text{H}_2\text{O}_{(l)}$

Which reactions will actually take place? **C, D, and E**

3. For the given balanced chemical equation:



- A) Which element is oxidized? Na
- B) Its oxidation number changes from 0 to +1.
- C) Which element is reduced? Fe
- D) Its oxidation number changes from +2 to 0.
- E) Which reactant is the oxidizing agent? Fe²⁺
- F) Which reactant is the reducing agent? Na_(l)