

1. For the following reactions, indicate whether the following are examples of synthesis, decomposition, complete combustion, incomplete combustion, single displacement, double displacement, or neutralization reactions. (6 marks)

- 1) $\text{H}_3\text{PO}_4 + 3 \text{KOH} \rightarrow 3 \text{H}_2\text{O} + \text{K}_3\text{PO}_4$ Neutralization
- 2) $\text{Pb} + \text{FeSO}_4 \rightarrow \text{PbSO}_4 + \text{Fe}$ Single displacement
- 3) $2 \text{AgNO}_3 + \text{Cu} \rightarrow \text{Cu}(\text{NO}_3)_2 + 2 \text{Ag}$ Single displacement
- 4) $2 \text{MgI}_2 + \text{Mn}(\text{SO}_3)_2 \rightarrow 2 \text{MgSO}_3 + \text{MnI}_4$ double displacement
- 5) $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$ decomposition
- 6) $\text{C}_3\text{H}_6 + 3 \text{O}_2 \rightarrow 3 \text{CO} + 3 \text{H}_2\text{O}$ incomplete combustion

2. For the following unbalanced chemical reactions

i) Identify the type of reaction (see question 1.)

ii) Balance each chemical equation. (6 marks)



TYPE
synthesis
complete
combustion
decomposition



3. For the following word equations, write balanced chemical equations. (12 marks)

a) Sodium phosphate and calcium chloride react to form calcium phosphate and sodium chloride.



b) Hydrogen gas and nitrogen monoxide react to form water and nitrogen gas.



c) When isopropanol ($\text{C}_3\text{H}_8\text{O}$) burns in oxygen, carbon dioxide, water, and heat are produced.



d) mercury(II) oxide \rightarrow mercury + oxygen



4. Predict the products of the following reactions, then balance the equations and state the type of reaction. (15 marks)



Type: SD



Type: DD



Type: DD



Type: Neutralization



Type: D