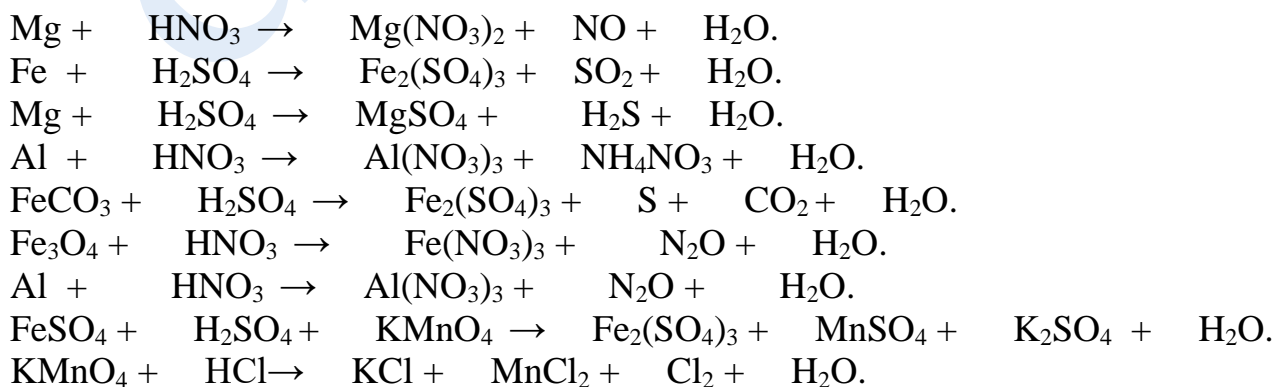


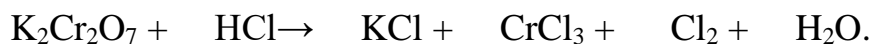
# CÁC BÀI TẬP VỀ CÂN BẰNG PHƯƠNG TRÌNH PHẢN ỨNG HÓA HỌC

Hoàn thành các phương trình phản ứng sau:

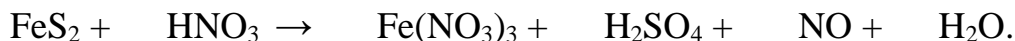
1.  $\text{FeS}_2 + \text{O}_2 \xrightarrow{t^\circ} \text{SO}_2\uparrow + \text{Fe}_2\text{O}_3.$
3.  $\text{SO}_2 + \text{H}_2\text{S} \rightarrow \text{S}\downarrow + \text{H}_2\text{O}$
4.  $\text{Fe}_2\text{O}_3 + \text{H}_2 \xrightarrow{t^\circ} \text{Fe}_3\text{O}_4 + \text{H}_2\text{O}$
5.  $\text{FeS} + \text{HCl} \rightarrow \text{FeCl}_2 + \text{H}_2\text{S}\uparrow$
6.  $\text{Fe}(\text{OH})_2 + \text{O}_2 + \text{H}_2\text{O} \rightarrow \text{Fe}(\text{OH})_3\downarrow$
7.  $\text{FeCl}_2 + \text{NaOH} \rightarrow \text{Fe}(\text{OH})_2\downarrow + \text{NaCl}$
8.  $\text{MnO}_2 + \text{HBr} \rightarrow \text{Br}_2 + \text{MnBr}_2 + \text{H}_2\text{O}.$
9.  $\text{Cl}_2 + \text{SO}_2 + \text{H}_2\text{O} \rightarrow \text{HCl} + \text{H}_2\text{SO}_4.$
10.  $\text{Ca}(\text{OH})_2 + \text{NH}_4\text{NO}_3 \rightarrow \text{NH}_3 + \text{Ca}(\text{NO}_3)_2 + \text{H}_2\text{O}.$
11.  $\text{Ca}(\text{H}_2\text{PO}_4)_2 + \text{Ca}(\text{OH})_2 \rightarrow \text{Ca}_3(\text{PO}_4)_2 + \text{H}_2\text{O}.$
17.  $\text{H}_2\text{SO}_4 + \text{Fe} \xrightarrow{t^\circ} \text{Fe}_2(\text{SO}_4)_3 + \text{SO}_2 + \text{H}_2\text{O}.$
18.  $\text{H}_2\text{SO}_4 + \text{Ag} \xrightarrow{t^\circ} \text{Ag}_2\text{SO}_4 + \text{SO}_2 + \text{H}_2\text{O}.$
22.  $\text{MnO}_2 + \text{HCl} \rightarrow \text{MnCl}_2 + \text{Cl}_2 + \text{H}_2\text{O}.$
24.  $\text{KMnO}_4 + \text{HCl} \rightarrow \text{KCl} + \text{MnCl}_2 + \text{Cl}_2 + \text{H}_2\text{O}.$
25.  $\text{KMnO}_4 + \text{NaCl} + \text{H}_2\text{SO}_4 \rightarrow \text{Cl}_2 + \text{H}_2\text{O} + \text{K}_2\text{SO}_4 + \text{Na}_2\text{SO}_4 + \text{MnSO}_4.$
27.  $\text{FeS}_2 + \text{O}_2 \xrightarrow{t^\circ} \text{Fe}_2\text{O}_3 + \text{SO}_2.$
28.  $\text{Cu} + \text{H}_2\text{SO}_{4(\text{đặc})} \xrightarrow{t^\circ} \text{CuSO}_4 + \text{SO}_2 + \text{H}_2\text{O}.$
34.  $\text{FeSO}_4 + \text{H}_2\text{SO}_4 + \text{KMnO}_4 \rightarrow \text{Fe}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4 + \text{MnSO}_4 + \text{H}_2\text{O}$
35.  $\text{KMnO}_4 + \text{K}_2\text{SO}_3 + \text{H}_2\text{O} \rightarrow \text{MnO}_2 + \text{K}_2\text{SO}_4 + \text{KOH}$
36.  $\text{SO}_2 + \text{KMnO}_4 + \text{H}_2\text{O} \rightarrow \text{MnSO}_4 + \text{K}_2\text{SO}_4 + \text{H}_2\text{SO}_4$
44.  $\text{Al} + \text{HNO}_{3(\text{rất loãng})} \rightarrow \text{Al}(\text{NO}_3)_3 + \text{N}_2 + \text{H}_2\text{O}$
45.  $\text{Al} + \text{HNO}_{3(\text{rất loãng})} \rightarrow \text{Al}(\text{NO}_3)_3 + \text{NH}_4\text{NO}_3 + \text{H}_2\text{O}$

## B. Dạng có môi trường:

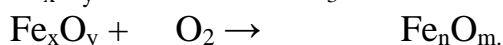




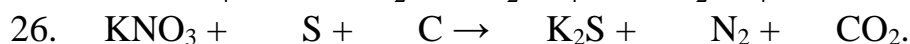
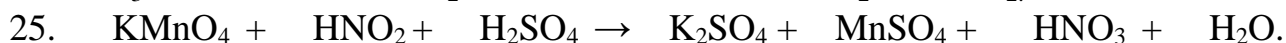
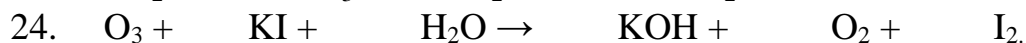
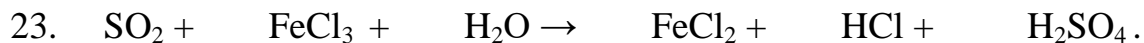
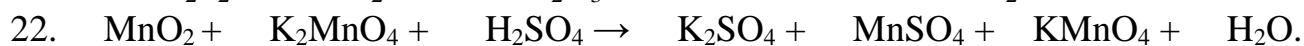
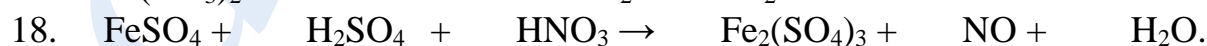
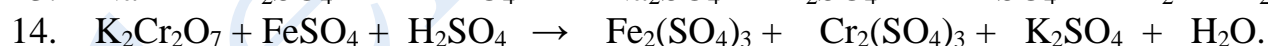
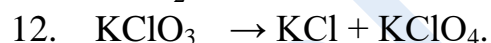
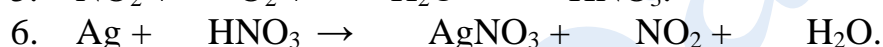
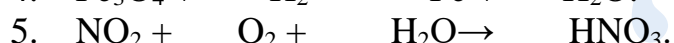
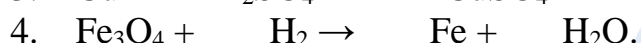
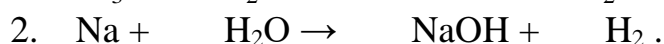
### E. Dạng phức tạp.



### F. Dạng có ẩn số:



## 2: Cân bằng các phản ứng sau bằng phương pháp thăng bằng electron, xác định chất khử-chất oxi hóa:



27.  $\text{HO-CH}_2\text{-CHO} + \text{KMnO}_4 + \text{H}_2\text{O} \rightarrow \text{CO}_2 + \text{KOH} + \text{MnO}_2 + \text{H}_2\text{O}.$
28.  $\text{Al} + \text{NaOH} + \text{H}_2\text{O} \rightarrow \text{NaAlO}_2 + \text{H}_2$
29.  $\text{CrI}_3 + \text{KOH} + \text{Cl}_2 \rightarrow \text{K}_2\text{CrO}_4 + \text{KIO}_4 + \text{KCl} + \text{H}_2\text{O}.$
30.  $\text{HNO}_3 \rightarrow \text{NO}_2 + \text{O}_2 + \text{H}_2\text{O}.$
31.  $\text{KMnO}_4 + \text{Na}_2\text{SO}_3 + \text{NaOH} \rightarrow \text{K}_2\text{MnO}_4 + \text{Na}_2\text{SO}_4 + \text{H}_2\text{O}.$
32.  $\text{FeCO}_3 + \text{HNO}_3 \rightarrow \text{Fe(NO}_3)_3 + \text{CO}_2 + \text{NO}_2 + \text{H}_2\text{O}.$
33.  $\text{KMnO}_4 + \text{H}_2\text{C}_2\text{O}_4 + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + \text{MnSO}_4 + \text{CO}_2 + \text{H}_2\text{O}.$
34.  $\text{CH}_3\text{OH} + \text{KMnO}_4 + \text{H}_2\text{SO}_4 \rightarrow \text{HCOOH} + \text{K}_2\text{SO}_4 + \text{MnSO}_4 + \text{H}_2\text{O}.$
35.  $\text{CH}_3\text{-CH=CH}_2 + \text{KMnO}_4 + \text{H}_2\text{O} \rightarrow \text{CH}_3\text{-CHOH-CH}_2\text{OH} + \text{KOH} + \text{MnO}_2$
36.  $\text{Fe}_x\text{O}_y + \text{H}_2\text{SO}_4 \rightarrow \text{Fe}_2(\text{SO}_4)_3 + \text{SO}_2 + \text{H}_2\text{O}.$
37.  $\text{NaClO}_2 + \text{Cl}_2 \rightarrow \text{NaCl} + \text{ClO}_2.$
38.  $\text{K}_2\text{Cr}_2\text{O}_7 + \text{NaNO}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{Cr}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4 + \text{NaNO}_3 + \text{H}_2\text{O}.$
39.  $\text{Cu}_2\text{S.FeS}_2 + \text{HNO}_3 \rightarrow \text{Fe(NO}_3)_3 + \text{Cu(NO}_3)_2 + \text{H}_2\text{SO}_4 + \text{NO} + \text{H}_2\text{O}.$
40.  $\text{KHSO}_4 + \text{KMnO}_4 + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + \text{MnSO}_4 + \text{H}_2\text{O}.$

**Bài 3: Cân bằng các phản ứng sau bằng phương pháp thăng bằng electron**

1.  $\text{K}_2\text{S} + \text{K}_2\text{Cr}_2\text{O}_7 + \text{H}_2\text{SO}_4 \rightarrow \text{S} + \text{Cr}_2(\text{SO}_4)_3 + \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$
2.  $\text{Fe}_3\text{O}_4 + \text{HNO}_3 \rightarrow \text{Fe(NO}_3)_3 + \text{NO} + \text{H}_2\text{O}$
3.  $\text{K}_2\text{SO}_3 + \text{KMnO}_4 + \text{KHSO}_4 \rightarrow \text{K}_2\text{SO}_4 + \text{MnSO}_4 + \text{H}_2\text{O}$
4.  $\text{SO}_2 + \text{KMnO}_4 + \text{H}_2\text{O} \rightarrow \text{K}_2\text{SO}_4 + \text{MnSO}_4 + \text{H}_2\text{SO}_4$
5.  $\text{K}_2\text{S} + \text{KMnO}_4 + \text{H}_2\text{SO}_4 \rightarrow \text{S} + \text{MnSO}_4 + \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$
6.  $\text{Mg} + \text{HNO}_3 \rightarrow \text{Mg(NO}_3)_2 + \text{NH}_4\text{NO}_3 + \text{H}_2\text{O}$
7.  $\text{CuS}_2 + \text{HNO}_3 \rightarrow \text{Cu(NO}_3)_2 + \text{H}_2\text{SO}_4 + \text{N}_2\text{O} + \text{H}_2\text{O}$
8.  $\text{K}_2\text{Cr}_2\text{O}_7 + \text{KI} + \text{H}_2\text{SO}_4 \rightarrow \text{Cr}_2(\text{SO}_4)_3 + \text{I}_2 + \text{K}_2\text{SO}_4 + \text{H}_2\text{O}$
9.  $\text{FeSO}_4 + \text{Cl}_2 + \text{H}_2\text{SO}_4 \rightarrow \text{Fe}_2(\text{SO}_4)_3 + \text{HCl}$
10.  $\text{KI} + \text{KClO}_3 + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + \text{I}_2 + \text{KCl} + \text{H}_2\text{O}$
11.  $\text{Cu}_2\text{S} + \text{HNO}_3 (\text{l}) \rightarrow \text{Cu(NO}_3)_2 + \text{CuSO}_4 + \text{NO} + \text{H}_2\text{O}$