

3.5.α. Χημικές αντιδράσεις – Σύνθεση – αποσύνθεση – διάσπαση.

1. Να χαρακτηρίσετε τις παρακάτω αντιδράσεις ως:

i) Μεταθετικές ή οξειδοαναγωγικές

ii) Σύνθεσης ή αποσύνθεσης ή απλής αντικατάστασης ή διπλής αντικατάστασης ή εξουδετέρωσης.

- α) $C + O_2 \rightarrow CO_2$
- β) $NaOH + HBr \rightarrow H_2O + NaBr$
- γ) $Ca + 2H_2O \rightarrow H_2 + Ca(OH)_2$
- δ) $Fe + 2HCl \rightarrow FeCl_2 + H_2$
- ε) $SO_2 \rightarrow O_2 + S$
- στ) $KClO_3 \rightarrow 3O_2 + KCl$
- ζ) $Mg + HNO_3 \rightarrow H_2 + Mg(NO_3)_2$
- η) $Pb(NO_3)_2 + 2KI \rightarrow PbI_2 + 2KNO_3$
- θ) $2Al(OH)_3 + 3H_2SO_4 \rightarrow 2Al_2(SO_4)_3 + 6H_2O$
- ι) $Na_2CO_3 + 2HBr \rightarrow H_2O + 2NaBr + CO_2$

2. Να συμπληρώσετε τους στοιχειομετρικούς συντελεστές των παρακάτω αντιδράσεων:

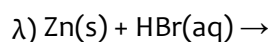
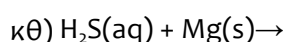
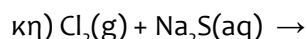
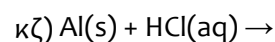
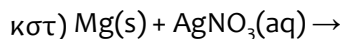
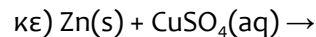
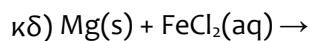
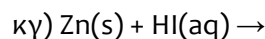
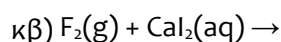
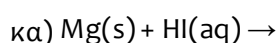
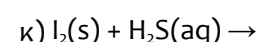
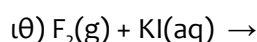
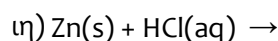
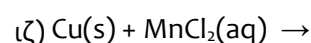
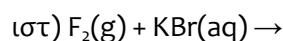
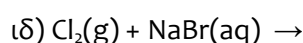
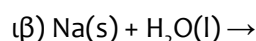
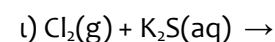
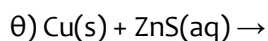
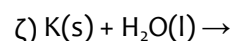
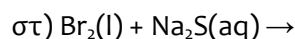
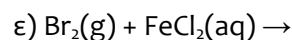
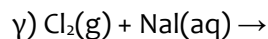
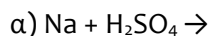
- α) $__ N_2 + __ H_2 \rightarrow __ NH_3$
- β) $__ H_2 + __ O_2 \rightarrow __ H_2O$
- γ) $__ C + __ H_2 \rightarrow __ CH_4$
- δ) $__ CH_4 + __ O_2 \rightarrow __ CO_2 + __ H_2O$
- ε) $__ H_2 + __ Cl_2 \rightarrow __ HCl$
- στ) $__ N_2 + __ O_2 \rightarrow __ NO_2$
- ζ) $__ Mg + __ O_2 \rightarrow __ MgO$
- η) $__ Na + __ O_2 \rightarrow __ Na_2O$
- θ) $__ FeCl_2 \rightarrow __ Cl_2 + __ Fe$
- ι) $__ NaClO_3 \rightarrow __ NaCl + __ O_2$

3. Να συμπληρώσετε τις παρακάτω χημικές εξισώσεις.

- α) $__ HgO \rightarrow __ + __$
- β) $__ H_2 + __ N_2 \rightarrow __$
- γ) $__ Ca(OH)_2 \rightarrow CaO + __$
- δ) $__ H_2S \rightarrow __ + __$
- ε) $__ CH_4 \rightarrow __ + __$
- στ) $__ SO_2 + __ O_2 \rightarrow SO_3$
- ζ) $__ H_3PO_4 \rightarrow __ + __ H_2O$
- η) $CaCO_3 \rightarrow CaO + __$
- θ) $__ Na + __ O_2 \rightarrow __$
- ι) $__ K + __ Cl_2 \rightarrow __$
- ια) $H_2O_2 \rightarrow H_2O + \frac{1}{2} O_2$
- ιβ) $Al_2S_3 \rightarrow 2Al + 3S$

3.5.β. Χημικές αντιδράσεις – Απλή αντικατάσταση.

1. Να συμπληρώσετε τις παρακάτω χημικές εξισώσεις και να εξηγήσετε εάν πραγματοποιούνται ή όχι.



2. Διαθέτουμε ένα κομμάτι μετάλλου το οποίο μπορεί να αποτελείται από μαγνήσιο ή χαλκό ή κοβάλτιο.

Λαμβάνουμε ένα δείγμα από το μέταλλο και το αποθέτουμε σε διάλυμα θειικού οξέος. Να εξηγήσετε με ποιο τρόπο θα συμπεράνουμε από ποιο μέταλλο αποτελείται το αρχικό κομμάτι.

Δίνεται ότι: το H_2SO_4 είναι άχρωμο, το MgSO_4 είναι λευκό και τα διαλύματα του άχρωμα, το CuSO_4 είναι μπλε και τα διαλύματα του γαλάζια, ενώ το CoSO_4 είναι κόκκινο, όπως και τα διαλύματα του.

3. Να περιγράψετε μια πειραματική διαδικασία, σύμφωνα με την οποία θα μπορούσαμε να διαπιστώσουμε αν ένα μεταλλικό αντικείμενο αποτελείται από άργυρο (Ag) ή ψευδάργυρο (Zn), με τη χρήση ενός υδατικού διαλύματος HCl.

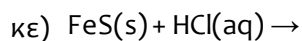
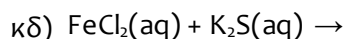
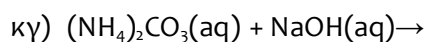
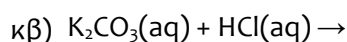
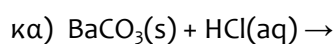
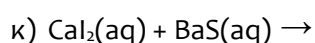
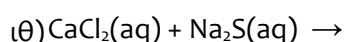
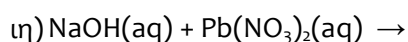
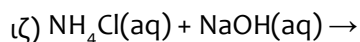
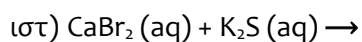
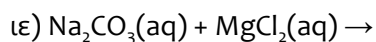
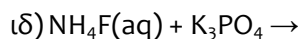
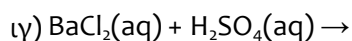
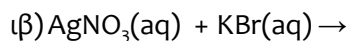
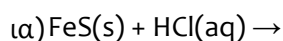
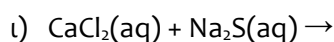
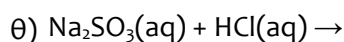
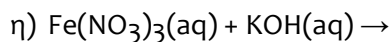
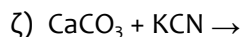
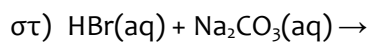
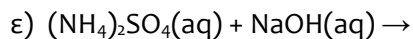
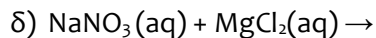
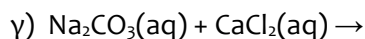
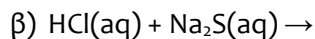
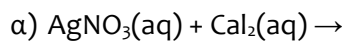
4. Να συμπληρώσετε τον παρακάτω πίνακα με + αν πραγματοποιείται αντίδραση και – αν δεν πραγματοποιείται, σύμφωνα με τη σειρά δραστηριότητας των μετάλλων:

	MnO	PtCl₂	FeSO₄	NaNO₃	PbS
Ag					
Ni					
Cr					
K					
Al					

5. Διαθέτουμε δύο σιδερένια δοχεία (Fe), δύο χάλκινα (Cu) και δύο δοχεία από αλουμίνιο (Al). Σε αυτά τα έξι δοχεία θα πρέπει να αποθηκευτούν: Na₂SO₄, Pb(NO₃)₂, SnSO₄, ZnCl₂, Cr₂(SO₄)₃ και CaBr₂.

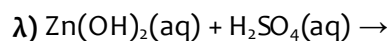
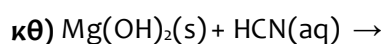
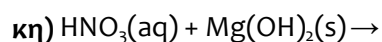
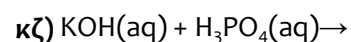
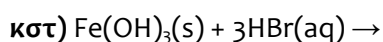
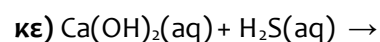
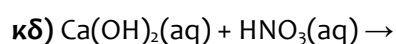
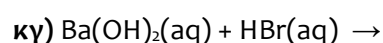
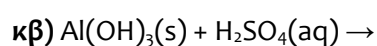
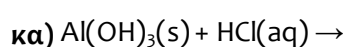
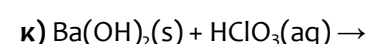
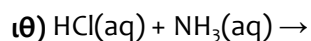
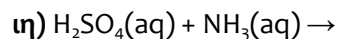
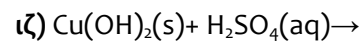
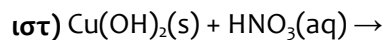
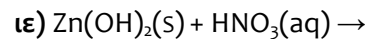
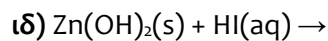
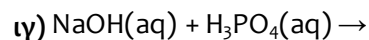
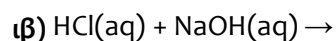
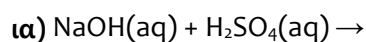
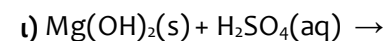
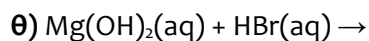
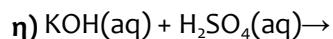
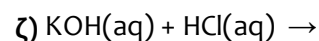
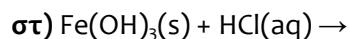
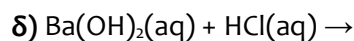
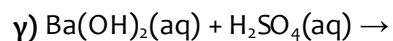
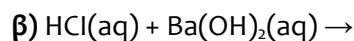
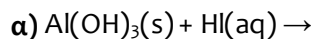
3.5.γ. Χημικές αντιδράσεις – Διπλή αντικατάσταση.

1. Να συμπληρώσετε τις παρακάτω χημικές εξισώσεις και να εξηγήσετε εάν πραγματοποιούνται ή όχι.



3.5.δ. Χημικές αντιδράσεις – Εξουδετέρωση.

1. Να συμπληρώσετε τις παρακάτω χημικές εξισώσεις.



3.5.Ε. Χημικές αντιδράσεις – Επανάληψη.

Να συμπληρώσετε τις παρακάτω χημικές εξισώσεις:

1. $\text{Cl}_2(\text{g}) + \text{CaI}_2(\text{aq}) \rightarrow$
2. $\text{AgNO}_3(\text{aq}) + \text{NaBr}(\text{aq}) \rightarrow$
3. $\text{NH}_3(\text{aq}) + \text{HNO}_3(\text{aq}) \rightarrow$
4. $\text{Al}(\text{s}) + \text{HI}(\text{aq}) \rightarrow$
5. $\text{Ca}(\text{OH})_2(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow$
6. $\text{K}_2\text{CO}_3(\text{aq}) + \text{CaCl}_2(\text{aq}) \rightarrow$
7. $\text{Zn}(\text{s}) + \text{HCl}(\text{aq}) \rightarrow$
8. $\text{KOH}(\text{aq}) + \text{HNO}_3(\text{aq}) \rightarrow$
9. $\text{Mg}(\text{s}) + \text{ZnCl}_2(\text{aq}) \rightarrow$
10. $\text{NH}_4\text{NO}_3(\text{aq}) + \text{KOH}(\text{aq}) \rightarrow$
11. $2\text{AgNO}_3(\text{aq}) + \text{CaBr}_2(\text{aq}) \rightarrow$
12. $\text{Cl}_2(\text{g}) + \text{CaBr}_2(\text{aq}) \rightarrow$
13. $\text{NaOH}(\text{aq}) + \text{Zn}(\text{NO}_3)_2(\text{aq}) \rightarrow$
14. $\text{AgNO}_3(\text{aq}) + \text{KI}(\text{aq}) \rightarrow$
15. $\text{F}_2(\text{g}) + \text{KBr}(\text{aq}) \rightarrow$
16. $\text{KOH}(\text{aq}) + \text{HBr}(\text{aq}) \rightarrow$
17. $\text{Mg}(\text{OH})_2(\text{s}) + \text{H}_2\text{S}(\text{aq}) \rightarrow$
18. $\text{Pb}(\text{NO}_2)_2(\text{aq}) + \text{Na}_2\text{S}(\text{aq}) \rightarrow$
19. $\text{Al}(\text{OH})_3(\text{s}) + \text{HBr}(\text{aq}) \rightarrow$
20. $\text{Na}_2\text{CO}_3(\text{aq}) + \text{HNO}_3(\text{aq}) \rightarrow$
21. $\text{Zn}(\text{OH})_2(\text{s}) + \text{HCl}(\text{aq}) \rightarrow$
22. $\text{Zn}(\text{s}) + \text{FeCl}_2(\text{aq}) \rightarrow$
23. $\text{HI}(\text{aq}) + \text{Ca}(\text{OH})_2(\text{aq}) \rightarrow$
24. $\text{Ca}(\text{OH})_2(\text{aq}) + \text{HBr}(\text{aq}) \rightarrow$
25. $\text{KOH}(\text{aq}) + \text{HI}(\text{aq}) \rightarrow$
26. $\text{FeCl}_3(\text{aq}) + \text{KOH}(\text{aq}) \rightarrow$
27. $\text{Cu}(\text{NO}_3)_2(\text{aq}) + \text{Na}_2\text{S}(\text{aq}) \rightarrow$
28. $\text{Mg}(\text{OH})_2(\text{s}) + \text{HCl}(\text{aq}) \rightarrow$
29. $\text{BaCO}_3(\text{s}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow$
30. $\text{Ca}(\text{s}) + \text{AgNO}_3(\text{aq}) \rightarrow$
31. $\text{Na}_2\text{SO}_4(\text{aq}) + \text{Ca}(\text{OH})_2(\text{aq}) \rightarrow$
32. $\text{K}_2\text{SO}_4(\text{aq}) + \text{Ba}(\text{OH})_2(\text{aq}) \rightarrow$
33. $\text{Zn}(\text{s}) + \text{CuCl}_2(\text{aq}) \rightarrow$
34. $\text{Ba}(\text{OH})_2(\text{aq}) + \text{H}_2\text{S}(\text{aq}) \rightarrow$

35. $\text{Cl}_2(\text{g}) + \text{H}_2\text{S}(\text{aq}) \rightarrow$
36. $\text{Pb}(\text{NO}_3)_2(\text{aq}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow$
37. $\text{NaOH}(\text{aq}) + \text{HBr}(\text{aq}) \rightarrow$
38. $\text{Na}_2\text{S}(\text{aq}) + \text{HBr}(\text{aq}) \rightarrow$
39. $\text{AgNO}_3(\text{aq}) + \text{KCl}(\text{aq}) \rightarrow$
40. $\text{HI}(\text{aq}) + \text{NaOH}(\text{aq}) \rightarrow$
41. $\text{Ca}(\text{NO}_3)_2(\text{aq}) + \text{Na}_2\text{CO}_3(\text{aq}) \rightarrow$
42. $\text{K}_2\text{SO}_3(\text{aq}) + \text{HBr}(\text{aq}) \rightarrow$
43. $\text{Al}(\text{s}) + \text{Fe}(\text{NO}_3)_2(\text{aq}) \rightarrow$
44. $\text{Ba}(\text{OH})_2(\text{aq}) + \text{HNO}_3(\text{aq}) \rightarrow$
45. $\text{Pb}(\text{NO}_3)_2(\text{aq}) + \text{KI}(\text{aq}) \rightarrow$
46. $\text{Mg}(\text{s}) + \text{HBr}(\text{aq}) \rightarrow$
47. $\text{Zn}(\text{s}) + \text{H}_2\text{SO}_4(\text{aq}) \rightarrow$
48. $\text{FeCl}_2(\text{aq}) + \text{K}_2\text{S}(\text{aq}) \rightarrow$
49. $\text{Na}(\text{s}) + \text{H}_2\text{O}(\text{l}) \rightarrow$
50. $\text{Ca}(\text{OH})_2(\text{aq}) + \text{K}_2\text{S}(\text{aq}) \rightarrow$
51. $\text{CaCO}_3(\text{s}) + \text{HCl}(\text{aq}) \rightarrow$
52. $\text{Ca}(\text{s}) + \text{ZnCl}_2(\text{aq}) \rightarrow$
53. $\text{BaCl}_2(\text{aq}) + \text{AgNO}_3(\text{aq}) \rightarrow$
54. $\text{NaOH}(\text{aq}) + \text{HNO}_3(\text{aq}) \rightarrow$
55. $\text{CaS}(\text{s}) + \text{HCl}(\text{aq}) \rightarrow$
56. $\text{Zn}(\text{NO}_3)_2(\text{aq}) + \text{K}_2\text{S}(\text{aq}) \rightarrow$
57. $\text{NH}_4\text{Cl}(\text{aq}) + \text{Ca}(\text{OH})_2(\text{aq}) \rightarrow$
58. $\text{Mg}(\text{s}) + \text{Cu}(\text{NO}_3)_2(\text{aq}) \rightarrow$
59. $\text{K}_2\text{S}(\text{aq}) + \text{Pb}(\text{NO}_3)_2(\text{aq}) \rightarrow$
60. $\text{Al}(\text{OH})_3(\text{s}) + \text{HNO}_3(\text{aq}) \rightarrow$