

CH-COORDINATION COMPOUNDS

① Addition Compounds :- When two or more than two simple salt is added in a particular stoichiometric ratio then a compound formed is known as Addition Compound.

Types of Addition Compound :-

- (A) Double Salt or Lattice Compound
- (B) Coordination Compound or Complex.

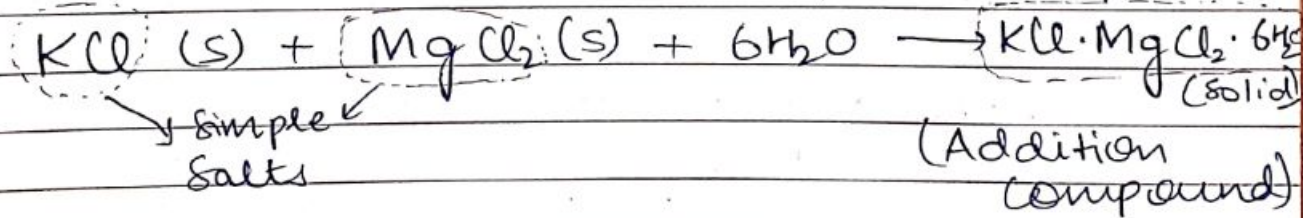
▣ Double Salt or Lattice Compound :-

↳ Double Salt is a part of addition compound which is formed on adding more than one simple salt having

Common anion.

↳ Double Salt exists in Solid form.

eg:-



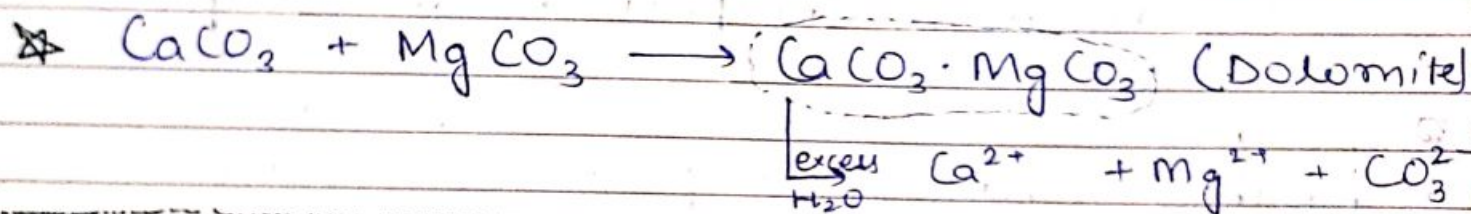
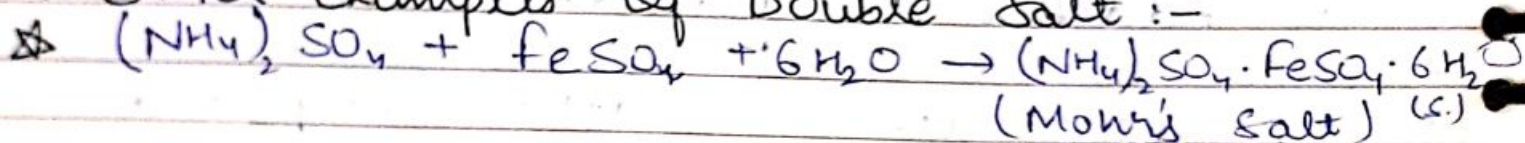
↳ Double Salt on addition of water ionise completely i.e. each ion of double salt give positive ^{test} salt, through qualitative analysis.

NOTE:- Qualitative Analysis is a systematic approach to find out presence of cation and anion.

Cation test using standard anion and they give a observation based on colour / specific test.

Anion test using standard cation and they give a observation based on colour / specific test.

↳ Other examples of Double salt :-



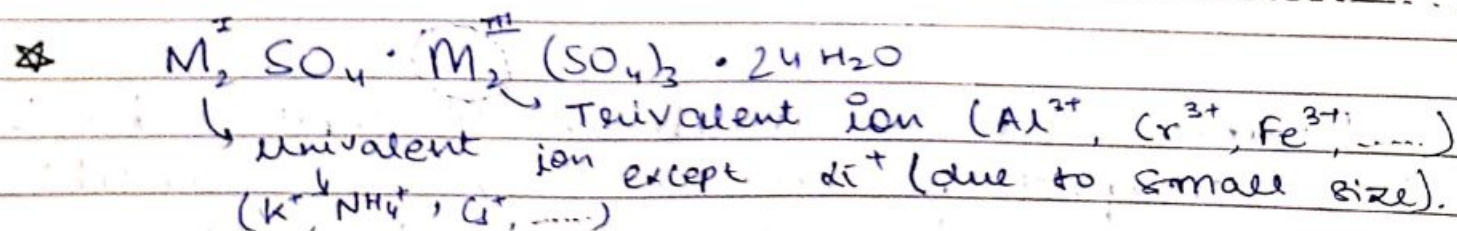
Q. Select correct statement about double salt :-

(A) Each ion in double salt retain their identifying

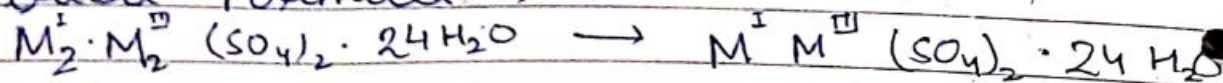
(B) Each ion of double salt gives positive confirmation of cation and anion

(C) Both A and B are correct

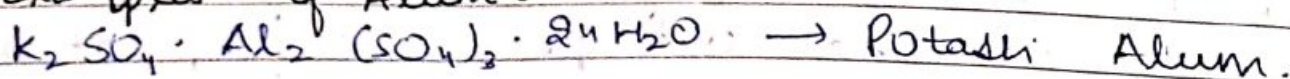
(D) None of Above



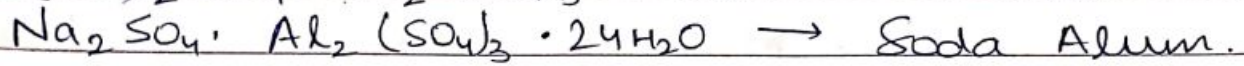
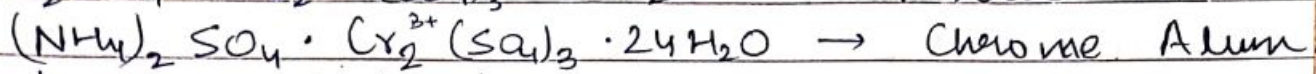
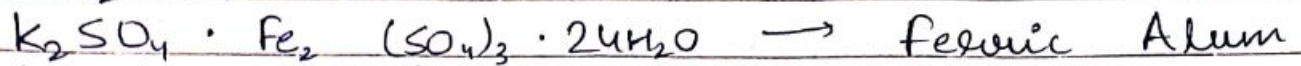
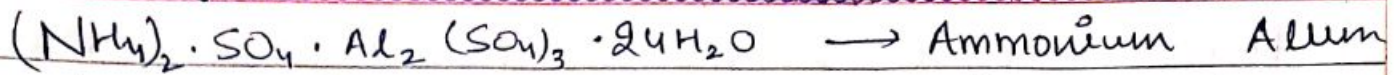
Empirical Formula \Rightarrow



Examples of Alum :-



T.I.P. :- If Aluminium is present in double salt then use monovalent ion's name in Alum naming, if not present use trivalent ion name.



Q. In $\text{K}_2 \text{SO}_4 \cdot \text{Al}_2 (\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$ (Potash Alum) how many ions can give positive test in qualitative analysis?

(A) 2

(B) 3

(C) 1

(D) 4

NOTE :- Alum swell on heating due to removal of H_2O and it converts into amorph. amorphous solid. (not a true solid or pseudo solid or arrangement of particle is irregular).

NOTE :- Uses of Alum :-

↳ as a blood coagulant.

↳

* Pseudo Alum :-

↳ All alums have same crystalline structures, i.e. they are isomorphous.

↳ Pseudo Alums have different crystalline structures :- $\text{M}^{\text{II}} \text{SO}_4 \cdot \text{M}_2^{\text{III}} (\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$

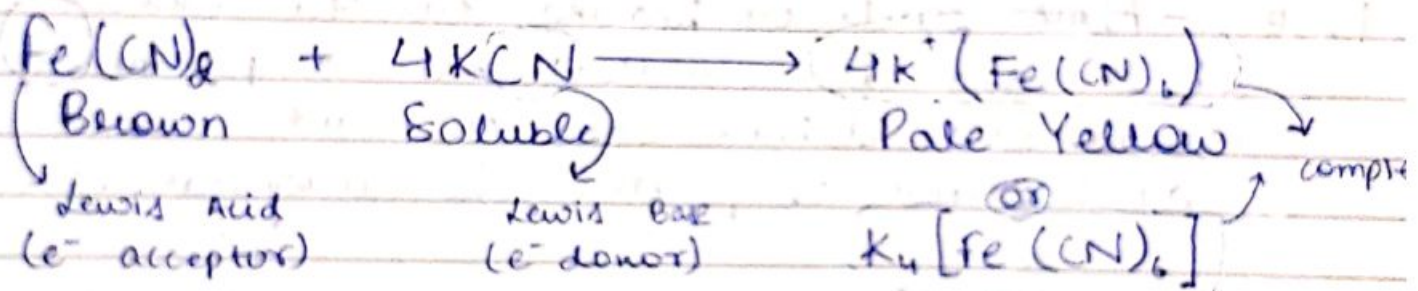
Eg. :- $\text{Mn}^{\text{II}} \text{SO}_4 \cdot \text{Al}_2 (\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$
↳ manganese

$\text{Na}_3 \text{PO}_4$ and $\text{Na}_3 \text{AsO}_4 \rightarrow$ Isomorphous

Q. How many of the given compound possess true alum property?

- (i) $(\text{NH}_4)_2\text{SO}_4 \cdot \text{Al}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$ → (A) 1 (B) 4
 (ii) $\text{K}_2\text{SO}_4 \cdot \text{Cr}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$ (C) 5 (D) None
 (iii) $\text{K}_2\text{SO}_4 \cdot \text{Fe}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$
 (iv) $\text{MgSO}_4 \cdot \text{Fe}_2(\text{SO}_4)_3 \cdot 24\text{H}_2\text{O}$
 (v) $\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$
 (vi) $\text{PbCO}_3 \cdot \text{Pb}(\text{OH})_2$

Q. Co-ordination Compound or Complexes :-



NOTE :- In complex/co-ordinate compound doesn't ionise completely in aq. solⁿ as Lewis base interacts with Lewis acid through co-ordinate bond, which doesn't dissociate in aqueous solⁿ.

↳ Complex/perfect complex doesn't give positive test of all ions present in comp^d.
 i.e. negative test of few ions is observed.

