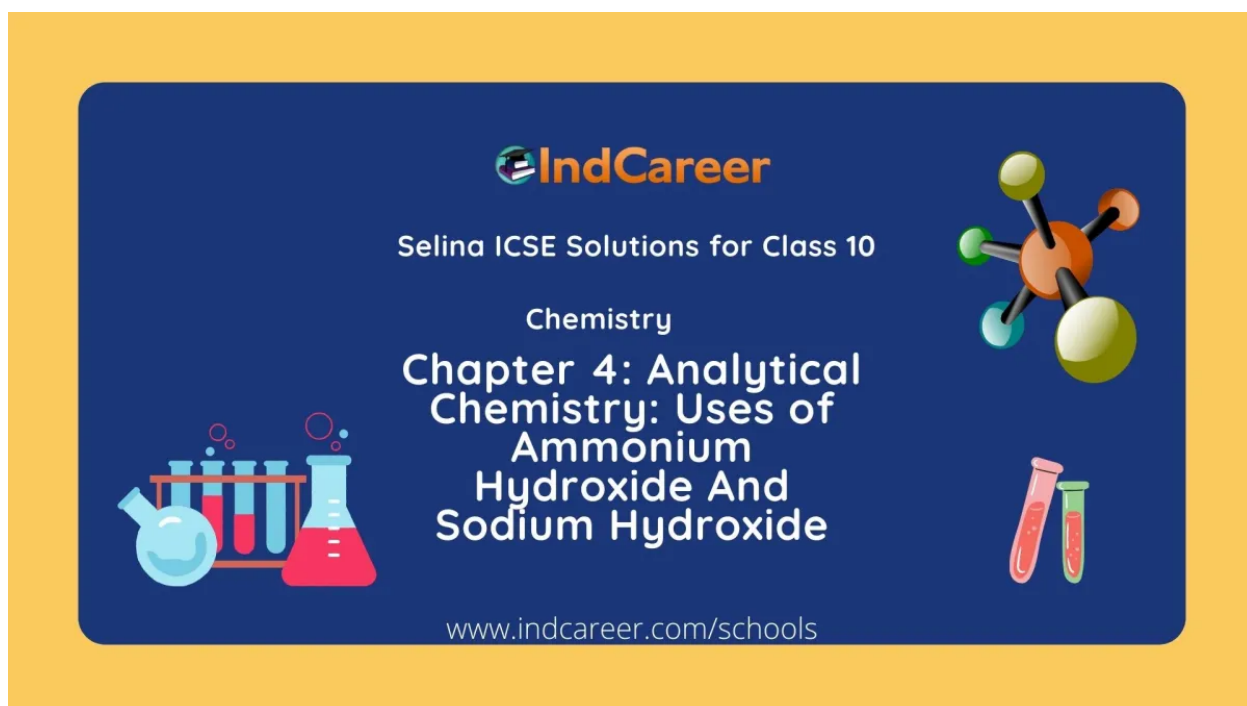


Selina Class 10 ICSE Solutions Chemistry :

Chapter 4- Analytical Chemistry: Uses of Ammonium Hydroxide And Sodium Hydroxide



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Selina Class 10 ICSE Solutions Chemistry :

Chapter 4- Analytical Chemistry: Uses of Ammonium Hydroxide And Sodium Hydroxide

Class 10: Chemistry Chapter 4 solutions. Complete Class 10 Chemistry Chapter 4 Notes.

Selina Class 10 ICSE Solutions Chemistry : Chapter 4- Analytical Chemistry: Uses of Ammonium Hydroxide And Sodium Hydroxide

Selina 10th Chemistry Chapter 4, Class 10 Chemistry Chapter 4 solutions

Exercise 1

Solution 1.

- (a) Ferrous salts : Light green
- (b) Ammonium salts : Colourless
- (c) Cupric salts : Blue
- (d) Calcium salts : Colourless
- (e) Aluminium salts : Colourless

Solution 2.

- (a) $\text{Cu}(\text{OH})_2$
- (b) ZnO
- (c) NaOH

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(d) NH_4OH

(e) Na^+ , Ca^{2+}

(f) Fe^{2+} , Mn^{2+}

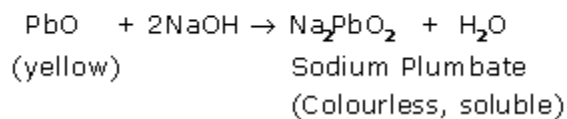
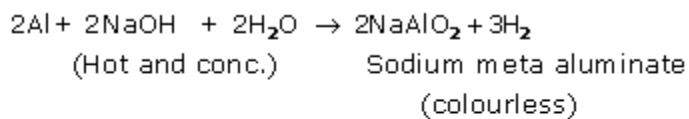
(g) Aluminium

(h) $\text{Zn}(\text{OH})_2$ and $\text{Al}(\text{OH})_3$

(i) PbO

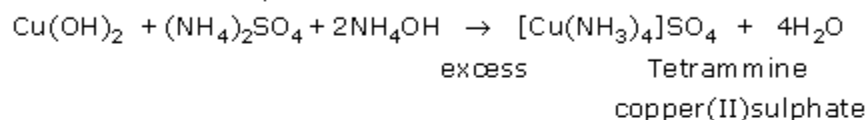
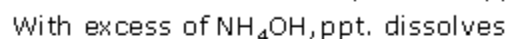
(j) Ammonium ion

Solution 3.

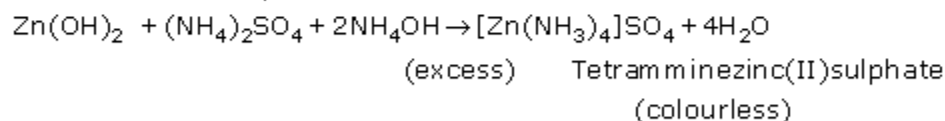
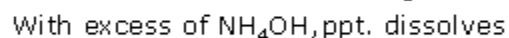


Solution 4.

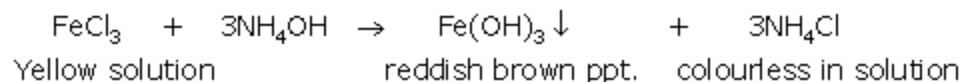
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(ii)



(iii)

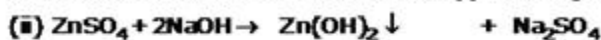


Solution 5.



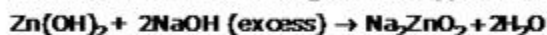
yellow reddish brown, ppt colourless in solution

In excess of alkali, the reddish brown ppt. of Fe(OH)_3 remains insoluble.

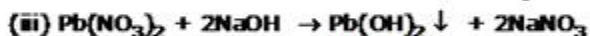


Colourless white gelatinous ppt. Colourless

In excess of alkali, white gelatinous ppt. of Zn(OH)_2 becomes soluble:

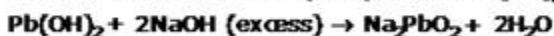


Sodium Zincate (colourless)



white ppt. (colourless)

In excess of alkali, white precipitate of Pb(OH)_2 becomes soluble:



Sodium Plumbate

(colourless)



Blue colourless Pale blue ppt. (colourless)

In excess of alkali, pale blue precipitate of Cu(OH)_2 is insoluble.

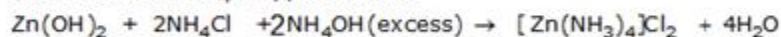
Solution 6.

Zinc chloride (ZnCl_2) is soluble in excess of ammonium hydroxide.



colourless white gelatinous ppt.

With excess of NH_4OH ppt dissolves



Tetrammine zinc (II) chloride

colourless

Solution 7.

(a) ZnCl_2

(b) Zn(OH)_2

Solution 8.

(a) PbO

(b) ZnO

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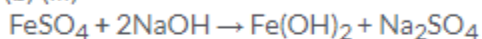
(c) K_2ZnO_2

Solution 9.

(a) (iii)

Aqueous solution of copper sulphate is blue.

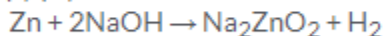
(b) (iii)



(Dirty green, (Colourless)

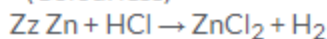
gelatinous ppt.)

(c) (iii)



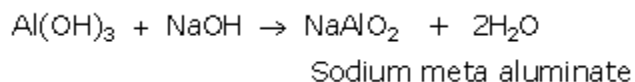
Sodium zincate

(Colourless)



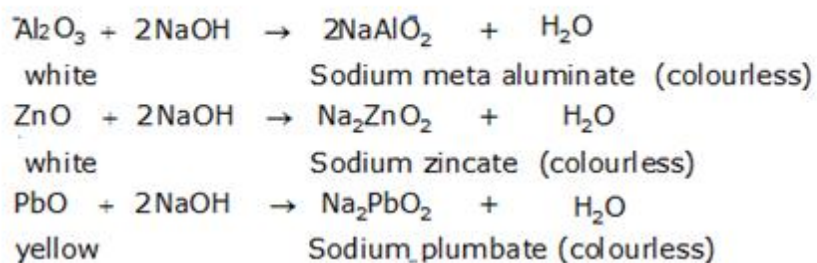
Solution 10.

When freshly precipitated aluminum hydroxide reacts with caustic soda solution, white salt of sodium meta aluminate is obtained.



Solution 11.

Amphoteric oxides are those compounds which react with both acids and alkali to form salt and water.



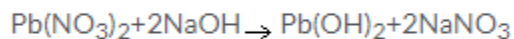
Solution 12.

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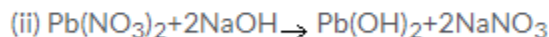
(a) Distinguish by adding Sodium hydroxide solution:



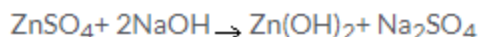
On adding excess of NaOH, ppt. of Ca(OH)_2 is sparingly soluble.



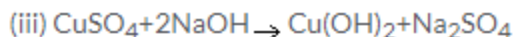
On adding excess of NaOH, ppt of Pb(OH)_2 is soluble.



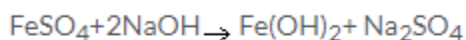
On adding excess of NaOH, ppt of Pb(OH)_2 is soluble.



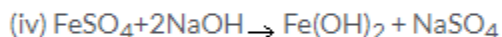
With excess of NaOH, white gelatinous ppt. of Zn(OH)_2 is soluble. So, these two cannot be distinguished by NaOH alone. However white ppt. of Pb(OH)_2 is readily soluble in acetic acid also.



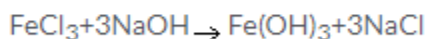
With excess of NaOH, alkali pale blue ppt of Cu(OH)_2 is insoluble.



With excess of NaOH, dirty green ppt. of Fe(OH)_2 is insoluble.



With excess of NaOH, dirty green ppt of Fe(OH)_2 is insoluble.



With excess of NaOH, reddish brown ppt of Fe(OH)_3 is insoluble.

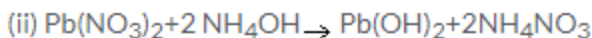
(b) Distinguish by adding Ammonium hydroxide solution:

(i) On addition of NH_4OH to calcium salts no precipitation of Ca(OH)_2 occurs even with addition of excess of NH_4OH because the concentration of OH^- ions from ionization of NH_4OH is so low that it cannot precipitate the hydroxide of calcium.



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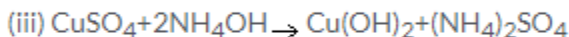
On adding excess of NH_4OH , chalky white ppt. of $\text{Pb}(\text{OH})_2$ is insoluble.



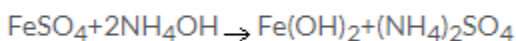
On adding excess of NH_4OH , chalky white ppt. of $\text{Pb}(\text{OH})_2$ is insoluble.



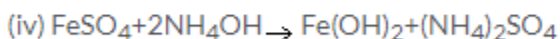
With excess of NH_4OH , white gelatinous ppt. of $\text{Zn}(\text{OH})_2$ is soluble.



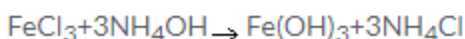
With excess of NH_4OH , pale blue ppt. of $\text{Cu}(\text{OH})_2$ is soluble.



With excess of NH_4OH , dirty green ppt. of $\text{Fe}(\text{OH})_2$ is insoluble.



With excess of NH_4OH , dirty green ppt. of $\text{Fe}(\text{OH})_2$ is insoluble.



With excess of NH_4OH , reddish brown ppt of $\text{Fe}(\text{OH})_3$ is insoluble.

Solution 13.

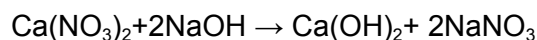
Lead carbonate is dissolved in dilute nitric acid and then ammonium hydroxide is added to it. A white precipitate is formed which is insoluble in excess.

Zinc carbonate is dissolved in dilute nitric acid and then ammonium hydroxide is added to it. A white precipitate is formed which is soluble in excess.

Solution 14.

Reagent bottles A and B can be identified by using calcium salts such as $\text{Ca}(\text{NO}_3)_2$.

On adding NaOH to $\text{Ca}(\text{NO}_3)_2$, $\text{Ca}(\text{OH})_2$ is precipitated as white precipitate which is sparingly soluble in excess of NaOH .



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Whereas, on addition of NH_4OH to calcium salts, no precipitation of $\text{Ca}(\text{OH})_2$ occurs even with addition of excess of NH_4OH because the concentration of OH^- ions from the ionization of NH_4OH is so low that it cannot precipitate the hydroxide of calcium.

So the reagent bottle which gives white precipitate is NaOH and the other is NH_4OH .

Intext Exercise

Solution 1.

- (i) Analysis: The determination of chemical components in a given sample is called analysis.
- (ii) Qualitative analysis: The analysis which involves the identification of the unknown substances in a given sample is called qualitative analysis.
- (iii) Reagent: A reagent is a substance that reacts with another substance.
- (iv) Precipitation: It is the process of formation of an insoluble solid when solutions are mixed. The solid thus formed is called precipitate.

Solution 2.

- (i) Yellow
- (ii) Colourless
- (iii) PaleGreen
- (iv) Colourless
- (v) Colourless

Solution 3.

- (i) Fe^{3+}
- (ii) Cu^{2+}
- (iii) Cu^{+2}
- (iv) Mn^{2+}

Solution 4.

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(i) Ca(OH)_2

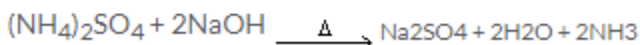
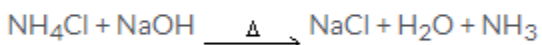
(ii) Fe(OH)_2 and Cu(OH)_2

(iii) Zn(OH)_2 and Pb(OH)_2

Solution 5.

When ammonium salt is heated with caustic soda solution, ammonia gas is evolved.

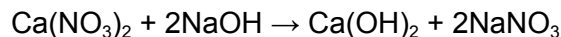
The balance equation is:



Solution 6.

NH_4OH and NaOH can be distinguished by using calcium salts.

For example on adding NaOH to $\text{Ca(NO}_3)_2$, Ca(OH)_2 is obtained as white precipitate which is sparingly soluble in excess of NaOH .



On addition of NH_4OH to calcium salts, no precipitation of Ca(OH)_2 occurs even with the addition of excess of NH_4OH . This is because the concentration of OH^- ions from the ionization of NH_4OH is so low that it cannot precipitate the hydroxide of calcium.

Solution 7.

(i) Fe(OH)_2 and Pb(OH)_2

(ii) Cu(OH)_2 and Zn(OH)_2



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- Chapter 2- Chemical Bonding
- Chapter 3- Acids, Bases and Salts
- Chapter 4- Analytical Chemistry: Uses of Ammonium Hydroxide And Sodium Hydroxide
- Chapter 5- Mole Concept and Stoichiometry
- Chapter 6- Electrolysis
- Chapter 7- Metallurgy
- Chapter 8- Study of Compounds - Hydrogen Chloride
- Chapter 9- Study of Compounds - Study of Compounds - Ammonia
- Chapter 10- Study of Compounds - Nitric Acid
- Chapter 11- Sulphuric Acid
- Chapter 12- Organic Chemistry
- Chapter 13- Practical Work

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