CHEMISTRY

PHYSICAL, INORGANIC, AND ORGANIC CHEMISTRY

QUALITATIVE ANALYSIS PART 1

Problem

1. $BaCl_2$ solution gives a white precipitate with a solution of a salt, which dissolves in dilute hydrochloric acid with the evolution of colourless, pungent smelling gas.The gas as well as the salt both are used as bleaching agent in the textile industries.The salt contains:

A. sulphite

B. sulphide

C. acetate

D. carbonate

Answer: A

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2. Which of the following precipitate(s) does /do not dissolve in excess of ammonia solution ?

A. $Zn(OH)_2$

B. $Ni(OH)_2$

C. $Al(OH)_3$

D. B and C both

Answer: C

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3. Chocolate brown precipitate is formed with:

A. Cu^{2+} ions and $\left[Fe(CN)_6\right]^{3-}$

B. Cu^{2+} ions and $\left[Fe(CN)_6\right]^{4-}$

C. Fe^{2+} ions and $\left[Fe(CN)_6\right]^{4-}$

D. Fe^{2+} ions and dimethylglyoxime

Answer: B

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4. Pink colour of acidified $KMnO_4$ is decolourised but there is no evolution of any gas.This may happen with the compound containing the following acid radical.

A. SO_3^{2-}

B. NO_2^-

C. S^{2-}

D. All of these

Answer: D

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5. Which of the following gives a precipitate with $Pb(NO_3)_2$?

A. Sodium chloride

B. Sodium acetate

C. Sodium nitrate

D. Disodium hydrogen phosphate

Answer: A

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6. Colour of cobalt chloride solution is:

A. pink

B. black

C. colourless

D. green

Answer: A

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7. A red colouration or precipitate is not obtained when:

A. Fe^{3+} reacts with potassium thiocyanate

B. Fe^{2+} reacts with dimethylglyoxime.

C. Hg^{2+} reacts with potassium iodide.

D. None

Answer: D

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8. When H_2S gas is passed through an ammonical salt solution X, a slightly white precipitate is formed.The X can be:

A. a cobalt salt

B. a lead salt

C. a zinc salt

D. a silver salt

Answer: C

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9. Consider the following statement:

S_1:Cu^{2+} ions are reduced to Cu^{+} by potassium iodide and potassium cyanide both, when taken in excess

S_2:H_2S will precipitate the sulphide of all the metals from the solutions of chlorides of Cu, Zn and Cd if the solution is aqueous.

S_3:The presence of magnesium is confirmed in qualitative analysis by the formation of a white crystal

S_4 :Calomel on reaction with potassium iodide gives red precipitate.

and arrange in the order of true/false.

A. $\top FF$

B. $TFTF$

C. TTTT

D. TTTF

Answer: D

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10. Statement-1 :Addition of NH_4OH to an aqueous solution of $BaCl_2$ in presence of NH_4Cl(excess) precipitates $Ba(OH)_2$.

Statement-2:$Ba(OH)_2$ is water soluble.

A. Both Statement-1 and Statement-2 are true and Statement-2 is the correct explanation of Statement-1.

B. Both Statement-1 and Statement-2 are true and Statement-2 is not correct explanation of Statement-1.

C. Statement-1 is true but Statement-2 is false.

D. Statement-1 is false but Statement-2 is true.

Answer: D

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11. Statement-1 : Sodium meta aluminate on boiling with ammonium chloride produces white gelatinous precipitate.

Statement-2 :Aluminium hydroxide is formed which is not soluble in water

A. Both Statement-1 and Statement-2 are true and Statement-2 is the correct explanation of Statement-1.

B. Both Statement-1 and Statement-2 are true and Statement-2 is not correct explanation of Statement-1.

C. Statement-1 is true but Statement-2 is false.

D. Statement-1 is false but Statement-2 is true.

Answer: A

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12. Which of the following statement(s) is (are) incorrect ?

A. Fe^{2+} ions give a dark blue precipitate with potassium hexacyanidoferrate (III) solution.

B. Fe^{3+} ions give intense blue precipitate with potassium hexacyanidoferrate (II) solution.

C. Fe^{3+} ions give a brown colouration with potassium hexacyanidoferrate (III) solution.

D. Fe^{2+} ions give a deep red colouration with ammonium thicyanate.

Answer: D

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13. Which of the following pair (s) of ions would be expected to form precipitate when dilute solutions are mixed?

A. $NH_4^+, \left[Co(NO_2)_6\right]^{3-}$

B. NH_4^+, CO_3^{2-}

C. Fe^{3+}, OH^-

D. Ba^{2+}, SO_4^{2-}

Answer: A,C,D

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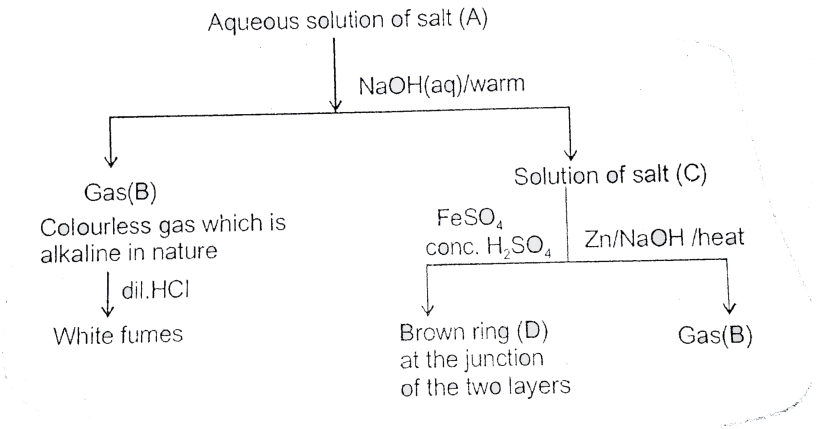

14.

Salt(A) on heating gives a colourless neutral gas which supports combustion.

From the aforesaid, flow diagram, answer the following questions.

The compound (A) contains the following acid radical.

A. NO_2^-

B. NO_3^-

C. Br^-

D. SO_3^{2-}

Answer: B

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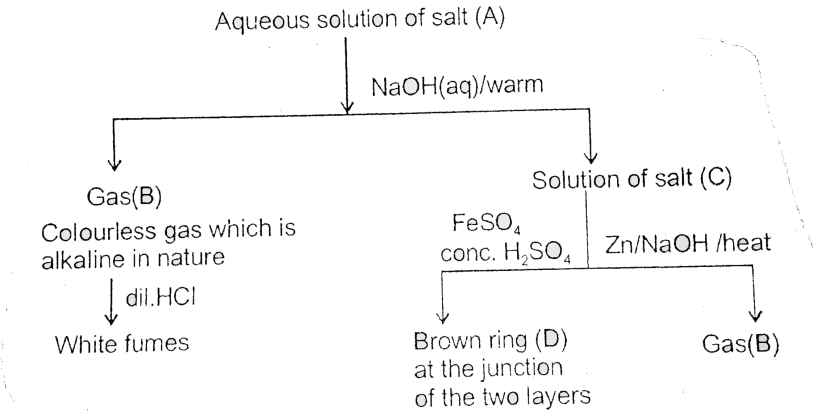
15.



Salt(A) on heating gives a colourless neutral gas which supports combustion.

From the aforesaid, flow diagram, answer the following questions.

The basic radical of salt (A) and gas B both gives brown precipitate with Nessler's reagent.The composition of the brown precipitate is:

A. $(NH_4)_2[HgI_4]$

B. $Hg(NH_2)NO_3$

C. $HgO.HG(NH_2)I$

D. $(NH_4)_3[Co(NO_2)_6]$

Answer: C

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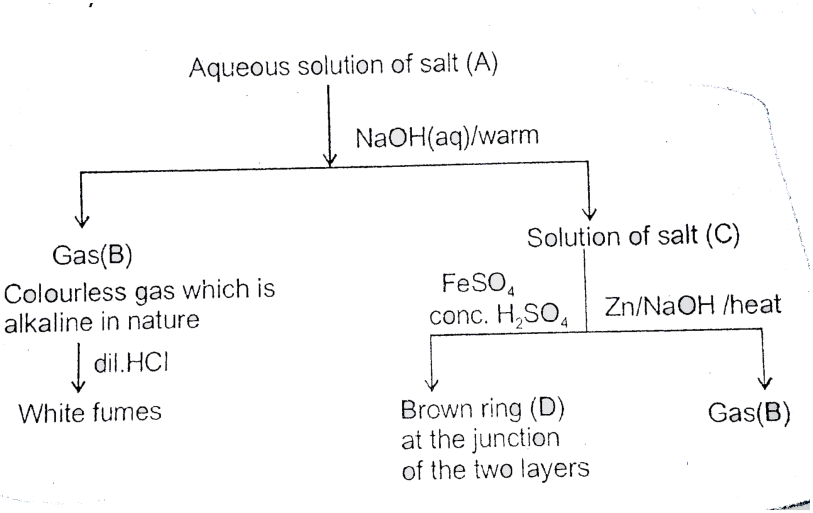

16.

Salt(A) on heating gives a colourless neutral gas which supports combustion.

From the aforesaid, flow diagram, answer the following questions.

Which of the following statement is correct ?

A. Salt (A) gives yellow precipitate with chloroplatinic acid as well as with sodium cobaltinitrite.

B. The brown ring is formed due to the formation of nitroso ferrous sulphate $[Fe(NO)]^{2+}SO_4^-$.

C. Salt C reacts with silver nitrate solution to form white precipitate.

D. (A) and (B) both.

Answer: D

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17. Magnesium is precipitated from its salt solution as only magnesium ammonium phosphate by adding disodium hydrogen phosphate solution in absence of ammonium chloride and aqueous ammonia.

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18. When a solution of nitrite acidified with dilute hydrochloric acid is treated with solid urea, the nitrile is decomposed, and nitrogen and carbon dioxide are evolved.

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19. Solution of alkali metal cyanide containing freshly prepared ion (II) sulphate solution and dilute H_2SO_4 on exposure to air produces prussian blue precipitate

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20. What happens when ?

(A) Aqueous solution of $CrCl_3$ is added to ammonia solution.

(B) Ammonium carbonates reacts with $MgCl_2$ (i) in absence of ammonium salts and (ii) in presence of ammonium salts:

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Board Level Exercis

1. Give two examples of acid radicals detected with dilute H_2SO_4.

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2. Give two examples of acid radicals detected with concentrated H_2SO_4.

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3. Why a salt containing lead turns black in colour, when placed for a long time in laboratory?

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4. NO_2 turns acidic KI-starch paper blue, why?

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5. Which acidic radical of dil. H_2SO_4 group gives brown ring test?

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6. In acidic radical conc. H_2SO_4 group which radical give's chromyl chloride test.

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7. $X^-(aq) + AgNO_3 \rightarrow \underset{\text{white ppt}}{AgX \downarrow}$

White ppt of AgX dissolve in dil ammonia solution.Then X is

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8. $X^-\_(aq) + AgNO_3 \rightarrow \underset{\text{bright yellow ppt}}{AgX \downarrow}$

Bright yellow ppt (AgX) is insouluble in conc. ammonia solution.Then find out X.

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9. Which of the acidic radical gives canary yellow ppt in ammonium molybdate test.

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10. Salt + conc. $H_2SO_4 +$ Ethyl alcohol $\xrightarrow{\Delta}$ Gas. Evolving gas (vapours) burns with green edged flame acidic radical may be.

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11. Basic radical which gives Nessler's reagent test in which brown precipitate or brown colouration obtained

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12. In salt solution when H_2S pass in presence of dil HCl, a orange color precipitate obtained.Radical & composition of precipitate will be

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13. In analysis of II^{nd} gp.A yellow ppt. is obtained which is insoluble in YAS.the radical may be.

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14. What is the group reagent of III^{rd} gp of basic radicals

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15. A white coloured carbonate which gives apple green color in the flame test.Give formula of that carbonate

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16. Name the three chlorides which are insoluble in dilute HCl.name one chloride, which is soluble in hot water but insoluble in cold water.

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17. Both NO_2 and Br_2 are brown gases. How can they be identified if placed separately in two containers?

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18. Precipitation of second group sulphides in qualitative analysis is carried out with H_2S in presence of HCl and nitric acid.Why?

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19. When H_2S gas is passed through $ZnCl_2$ solution.ZnS is not precipitated, why?

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20. HNO_3 or H_2SO_4 are not used to prepare solution for analysis of basic radicals.

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21. Hydrochloride acid contains $Cl-$ ions but it does not give positive chromyl chloride test, why?

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22. What happens when ?

(a)Copper sulphate is treated with excess of NH_4OH

(b)Bismuth chloride is treated with sodium stannite solution in presence of $NaOH$.

(c)Stannous chloride is treated with mercuric chloride.

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23. Identify the unknown species and complete the following

(i)$(A) + BaCl_2 \rightarrow$ White precipitate

(ii)$NaOH + (B) \rightarrow NH_3$ gas

(iii)$(C) + MnO_2 + H_2SO_4 \rightarrow$ Violet vapours

(iv)$(D) + K_2Cr_2O_7 + H_2SO_4 \rightarrow$ Green coloured solution

(vi) $\underset{\text{Colourless}}{\underset{\text{solid}}{E}} \xrightarrow{\text{Heat}}$ Yellow copound

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24. Give examples and explain with equations:

(a)Two colourless solution give a black precipitate on mixing.

(b)Two colourless solutions give a red precipitate on mixing, soluble in excess of one of them.

(c)Two colourless solutions give a white precipitate on mixing, soluble in ammonium hydroxide.

(d)Two colourless solutions give a yellow precipitate on mixing.

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Exercise 1 Part 1 Qualitative Analysis

1. What will happen if to a solution of $Ca(HCO_3)_2$ formed by passing the carbon dioxide through a milky solution of $CaCO_3$ for a longer time, ammonia solution is added?

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2. Write the names of the acidic radicals which can be tested by aqueous solution of barium chloride.

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3. Can we perform sodium nitroprusside test for sulphide, if sulphite is also present in sodium carbonate extract of sulphide?

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4. What will happen if to a white precipitate of $BaSO_3$, bromine water is added?

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5. A nitrite solution is added to a saturated solution of iron (II) acidified with dilute acetic acid or with dilute sulphuric acid.If any reactions occurs then write the name and chemical composition of the product formed.Write also the chemical equations involved.

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6. What will happen ?(Also write the chemical equations).

(a)When a filter paper moistened with potassium iodate and starch solution is brought in contact with sulphur dioxide gas.

(b)When H_2S gas is made to react with sodium tetrahydroxidoplumbate (II) solution.

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7. What happens when a sulphite reacts with dilute H_2SO_4 in presence of zinc ?

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8. A compound containing acetate radical is made to react with neutral ferric chloride. The solution is then diluted with water and boiled for $1-2$ minutes. A reddish brown precipitate is obtained.Give the chemical composition of reddish brown precipitate.

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9. In which reagents the $AgCl$ precipitate is soluble?

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10. What will happen when free bromine, iodine and chlorine separately react with a yellow dye stuff, fluorescein?

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11. In which of the following reagents, the white precipitate of $PbSO_4$ is soluble?

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12. Mercuric nitrate solution reacts with a soluble sulphate forming a yellow precipitate. If the statement is true then explain giving the complete balanced equation.

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13. Can we use $Ba(NO_3)_2$ instead of $BaCl_2$ for testing sulphate radical?

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Exercise 1 Part 2 Qualitative Analysis

1. What is the formula of iodide of Millon's base?

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2. What happens when ammonia gas is passed into a solution of sodium cobaltinitrite ?

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3. When calomel reacts with ammonia solution, a black precipitate is fomed. Write the chemical equation also name the reaction nature.

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4. What products are formed when precipitate formed by the reaction of Hg_2^{2+} ions and excess of sodium hydroxide solution is boiled?

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5. Why do lead salts turn black on keeping for a long time in the laboratory?

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6. Name one chloride which is soluble in hot water as well as in excess of HCl.

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7. Does mercuric sulphide dissolve in sodium sulphide solution (of $2M$)?

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8. What happens when white precipitate of $Bi(OH)_3$ is boiled ?

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9. Why Na_2S cannot be used in place of H_2S (in presence of HCl) as a reagent for II^{nd} group cations ?

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10. Is their any reaction other then cyanide reaction which can be used for the differentiation of Cu^{2+} and Cd^{2+} ions ?

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11. Which basic radical is tested with the help of alkaline sodium stannite?

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12. What happens when ammonium sulphide solution reacts with a solution containing a $Cr(III)$ salt?

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13. Can $Cr(III)$ salt be oxidised to $Cr(VI)$ salt by potassium (or ammonium) peroxodisulphate ?

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14. Do $Fe(III)$ salts and $Fe(II)$ salts both give red colouration with dimethylglyoxime in ammonical solution. If not then which iron salt gives red colouration with dimethylglyoxime ?

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15. Which colour precipitate is fomed by $Fe(II)$ salt with potassium ferrocyanide, (i)in complete absence of air and (ii)under ordinary atmospheric condition ?

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16. Which basic radical(s) decolourize acidic $KMnO_4$?

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17. Partial precipitation of Mn^{2+} as $Mn(OH)_2$ occurs with ammonia solution but the precipitate is soluble in ammonium salts. Explain?

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18. What happens when $Mn(II)$ ions free from chloride ions react with acidified solution of $(NH_4)_2S_2O_8$ or $K_2S_2O_8$ in presence of a few drops

of $AgNO_3$ solution?

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19. Why $Zn(II)$ salt is not precipitated as $Zn(OH)_2$ by ammonia solution in the presence of excess of ammonium

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20. What will happen if the precipitation of V^{th} group cation by ammonium carbonate is carried out in neutral medium ?

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21. What happens when ammonium sulphate solution is added to a solution containing both Sr^{2+} and Ca^{2+} ions ?

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22. Which colour precipitate is obtained when a solution of Ca^{2+} ions reacts with potassium ferrocyanide.

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Exercise 2

1. Salt $+H_2SO_4$ (dilute) $\rightarrow$ Coloured vapours which turns starch iodide paper blue.Identify the acid radical and the coloured vapours giving the relevant chemical equations.

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2. Which chloride of I^{st} group basic radicals turns black on treatment with NH_3?

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3. Which basic radicals form oxo-cations in aqueous solutions ?

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4. Which radical of group IV^{th} gives bluish white / white precipitate with excess $K_4\left[Fe(CN)_6\right]$?

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5. What products are formed ? When :

(i)Disodium hydrogen phosphate is added to magnesium sulphate in presence of ammonium chloride and aqueous ammonia.

(ii)A solution containing Zn^{2+} ions is poured in an aqueous ammonia.

(iii)$Bi(NO_3)_3$ solution is mixed with KI and then resulting precipitate is heated with water.

(iv)Disodium hydrogen phosphate is boiled with concentrated HNO_3 and ammonium molybdate reagent.

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6. Complete and balance the following chemical reactions.

(i)$Cu(BO_2)_2 + C \xrightarrow{\text{fused}}$, (ii)$AgBr + \text{concentrated}NH_3 \rightarrow$

(iii)$Cr(OH)_3 + Na_2CO_3 + KNO_3$ fused , (iv)$Cu(NO_3)_2 \xrightarrow{\Delta}$

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7. Complete and balance the following reaction.

(i)$Na_2S + CdCO_3 \rightarrow$ .....+.... , (ii)$CoCl_2 + NH_2SCN \xrightarrow{\text{Ether}}$ ....+....

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8. A black coloured compound (A) on reaction with dilute H_2SO_4 gives a gas (B) which on passing in a solution of an acid (C) gives a white turbidity (D).Gas (B) when passed in an acidified solution of a compound (E) gives a precipitate (F) soluble in dilute HNO_3.After boiling this solution when an excess of NH_4OH is added a intense blue coloured compound (G) is formed. To this solution on addition of acetic

acid and aqueous $K_4\left[Fe(CN)_6\right]$ a chocolate brown precipitate (H) is obtained.On addition of an aqueous solution of $BaCl_2$ to an aqueous solution of (E) a white precipitate insoluble in dilute HCl is obtained. Identify the compounds from (A) to (H).

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9. A compound (A) is greenish crystalline salt, which gave the following reactions.

(i)Addition of $BaCl_2$ solution to the solution of (A) results in the formation of white precipitate (B) which is insoluble in dilute HCl.

(ii)On heating (A), water vapours and two oxides of sulphur (C) and (D) are liberated leaving a red brown residue (E).

(iii)(E) dissolves in warm concentrated HCl to give a yellow solution (F)

.

(iv)Solution (F) on treatment with thiocyanate ions gives blood red coloured compound (G).

Identify the compounds from (A) to (G).

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10. A white substance (A) reacts with dilute H_2SO_4 to produce a colourless gas (B) and a colourless solution (C).The reaction between (B) and acidified $K_2Cr_2O_7$ solution produces a green solution and a slightly coloured precipitate (D).The substance (D) burns in air to produce a gas (E) which reacts with (B) to yield (D) and a colourless liquid. Anhydrous copper sulphate is turned blue on addition of this colouless liquid.Addition of aqueous NH_3 or $NaOH$ to (C) produces first a white precipitate which dissolves in the excess of the respective reagent to produce a clear solution in each case. Identify (A), (B), (C), (D) and (E).

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11. A mixture of two salts was treated as follows.

(i)The mixture was heated with precipitated MnO_2 and concentrated H_2SO_4 when a yellowish green gas was liberated.

(ii)The mixture on heating with $NaOH$ solution gave a gas which turned

red litmus blue.

(iii)Its solution in water gave red colouration with dimethylglyoxime in alkaline solution and white precipitate with $K_4\left[Fe(CN)_6\right]$ in absence of air.

(iv)The mixture was boiled with KOH and the liberated gas was bubbled through an alkaline solution of K_2HgI_4 to give a brown precipitate. Identify the ions present in the mixture.

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12. (i) An aqueous solution of a compound (A) is acidic towards litmus and (A) sublimes at about $300^\circ C$.

(ii) (A) on treatment with an excess of NH_4SCN gives a red coloured compound (B) and on treatment with a solution of $K_4\left[Fe(CN)_6\right]$ gives a blue coloured compound (C).

(iii) (A) on heating with excess of $K_2Cr_2O_7$ in the presence of concentrated H_2SO_4 evolves deep red vapours of (D).

(iv) On passing the vapour of (D) into a solution of NaOH and then adding the solution of acetic acid and lead acetate, a yellow precipitate of

compound (E) is obtained.

Identify (A) to (E) and give chemical equations for the reactions.

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13. (i)A blue coloured compound (A) on heating gives two product (B) & (C).

(ii)A metal (D) is deposited on passing hydrogen through heated (B).

(iii)The solution of (B) in HCl on treatment with the $\left[Fe(CN)_6\right]^{4-}$ gives a chocolate brown coloured precipitate of compound (E).

(iv)(C) turns lime water milky which disappears on continuous passage of (C) forming a compound (F).

Identigfy (A) to (F) and give chemical equations for the reactions at step (i) to (iv).

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14. Why in cobalt nitrate test for aluminium salts, excess of cobalt nitrate should not be added ?

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15. In the reaction sequence:

$CrO_2Cl_2 \xrightarrow{NaOH} A \xrightarrow{dil.H_2SO_4} B \xrightarrow{NaOH} C \xrightarrow{AgNO_3} D$

Identify $[A]$ to $[D]$.

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16. What happens when ?

(a)To a Zn^{2+} ions solution faintly acidified with $2M$ acetic acid, $0.1mL$ of $0.25MCuSO_4$ solution and $2mL$ of ammonium tetrathiocyanatomercurate (II) reagents is added.

(b) The above test is performed in absence of $CuSO_4$ solution.

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Exercise 3

1. A mixture consists (A) (red solid) and (B) (colourless solid) which gives lilac colour in flame.

(a)Mixture gives black precipitate (C) on passing $H_2S(g)$.

(b)(C) is soluble in aquaregia and on evaporation of aquaregia and adding $SnCl_2$ gives greyish black precipitate (D).

The salt solution with NH_4OH gives a brown precipitate.

(i)The sodium extract of the salt with $CCl_4 / FeCl_3$ gives a violent layer.

(ii)The sodium extract gives yellow precipitate with $AgNO_3$ solution which is insoluble in dilute ammonia solution.

Identify (A) and (B), and the precipitates (C) and (D).

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2. A sodium salt on treatment with $MgCl_2$ gives white precipitate only on heating. The anion of sodium salt is

A. HCO_3^-

B. CO_3^{2-}

C. NO_3^-

D. SO_4^{2-}

Answer: A

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3. A metal nitrate reacts with KI to give a black precipitate which on addition of excess of Kl is converted into orange colour solution.The cation of the metal nitrate is :

A. Hg^{2+}

B. Bi^{3+}

C. Pb^{2+}

D. Cu^{+}

Answer: B

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4. A white precipitate is obtained when a solution is diluted with H_2O and boiled.On addition of excess NH_4Cl/NH_4OH, the volume of precipitate decrease leaving behind a white gelationous precipitate. Identify the precipitate which dissolves in ammonia solution or NH_4Cl

A. $Al(OH)_3$

B. $Zn(OH)_2$

C. $Mg(OH)_2$

D. $Ca(OH)_2$

Answer: B

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5. In blue solution of copper sulphate excess of KCN is added then solution becomes colourless due to the formation of :

A. $\left[Cu(CN)_4\right]^{2-}$

B. Cu^{2+} get reduced to form $\left[Cu(CN)_4\right]^{3-}$

C. $Cu(CN)_2$

D. $CuCN$

Answer: B

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6. $MgSO_4 + NH_4OH + Na_2HPO_4 \rightarrow$ white crystalline precipitate.The formula of crystalline precipitate is:

A. $MgCl_2.\ MgSO_4$

B. $MgSO_4$

C. $Mg(NH_4)PO_4$

D. $Mg(PO_4)_2$

Answer: C

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7. A solution of a metal ion when treated with KI gives a red precipitate which dissolves in excess KI to give a colourless solution.Moreover, the solution of metal ion on treatment with a solution of cobalt (II) thiocyanate gives rise to a deep blue crystalline precipitate.The metal ion is:

A. Pb^{2+}

B. Hg^{2+}

C. Cu^{2+}

D. Co^{2+}

Answer: B

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8. A solution of colourless salt H on boiling with excess $NaOH$ produces a nonflammable gas.The gas evolution ceases after some time.Upon

addition of Zn dust to the same solution, the gas evolution restarts.The colourless salt(s) H is (are) :

A. NH_4NO_3

B. NH_4NO_2

C. NH_4Cl

D. $(NH_4)_2SO_4$

Answer: A,B

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9. p-Amino-N, N-dimethylaniline is added to a strongly acidic solution of X.The resulting solution is treated with few drops of aqueous solution of Y to yield blue colouration due to the formation of methylene blue.Treatment of the aqueous solution of Y with the reagent potassium hexacyanoferrate(II) leads to the formation of an intension blue precipitate.The precipitate dissolves on excess addition of the reagent.Similarly, treatment of the solution of Y with the solution of

potassium hexacyanoferrate(III) leads to a brown coloration due to the formation of Z.

The compound X is:

A. $NaNO_3$

B. $NaCl$

C. Na_2SO_4

D. Na_2S

Answer: C

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reagent.Similarly, treatment of the solution of Y with the solution of potassium hexacyanoferrate(III) leads to a brown coloration due to the formation of Z.

The compound Y is :

A. $MgCl_2$

B. $FeCl_2$

C. $FeCl_3$

D. $ZnCl_2$

Answer: C

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precipitate.The precipitate dissolves on excess addition of the reagent.Similarly, treatment of the solution of Y with the solution of potassium hexacyanoferrate(III) leads to a brown coloration due to the formation of Z.

The compound Z is:

A. $Mg_2\left[Fe(CN)_6\right]$

B. $Fe\left[Fe(CN)_6\right]$

C. $Fe_4\left[Fe(CN)_6\right]_3$

D. $K_2Zn_3\left[Fe(CN)_6\right]_2$

Answer: B

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12. When a metal rod M is dipped into an aqueous colourless concentrated solution of compound N the solution turns light blue.Addition of aqueous $NaCl$ to the blue solution gives a white precipitate O.Addition of aqueous NH_3 dissolves O and gives an intense

blue solution.

The metal rod M is :

A. Fe

B. Cu

C. Ni

D. Co

Answer: B

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The compound N is :

A. $AgNO_3$

B. $Zn(NO_3)_2$

C. $Al(NO_3)_3$

D. $Pb(NO_3)_2$

Answer: A

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14. When a metal rod M is dipped into an aqueous colourless concentrated solution of compound N the solution turns light blue.Addition of aqueous $NaCl$ to the blue solution gives a white precipitate O.Addition of aqueous NH_3 dissolves O and gives an intense blue solution.

The final solution contains

A. $\left[Pb(NH_3)_4\right]^{2+}$ and $\left[CoCl_4\right]^{2-}$

B. $\left[Al(NH_3)_4\right]^{3+}$ and $\left[Cu(NH_3)_4\right]^{2+}$

C. $\left[Al(NH_3)_2\right]^+$ and $\left[Cu(NH_3)_4\right]^{2+}$

D. $\left[Al(NH_3)_2\right]^+$ and $\left[Ni(NH_3)_6\right]^{2+}$

Answer: C

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15. Passing H_2S gas into a mixture of Mn^{2+}, Ni^{2+}, Cu^{2+} and Hg^{2+} ions in an acidified aqueous solution precipitatates:

A. CuS and HgS

B. MnS and NiS

C. MnS and NiS

D. NiS and HgS

Answer: A

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16. The equilibrium

$2Cu(I) \Leftrightarrow cu^0 + Cu^{II}$

in aquous medium at $25^\circ C$ shifts towards the left in the presence of :

A. NO_3^-

B. Cl^-

C. SCN^-

D. CN^-

Answer: B,C,D

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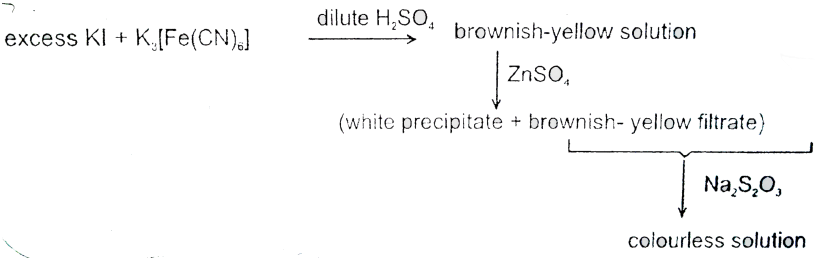
17. For the given aqueous reaction which of the statement(s) is (are) true?



A. The first reaction is a redox reaction

B. White precipitate is $Zn_3\left[Fe(CN)_6\right]_2$

C. Addition of filtrate to starch solution gives a blue colour.

D. White precipitate is soluble in $NaOH$ solution

Answer: A,C,D

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18. Concentrated nitric acid, upon long standing, turns yellow-brown due to the formation of:

A. NO

B. NO_2

C. N_2O

D. N_2O_4

Answer: B

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19. Upon treatment with ammoniacal H_2S, the metal ion that precipitates as a sulfide is:

A. $Fe(III)$

B. $Al(III)$

C. $Mg(II)$

D. $Zn(II)$

Answer: D

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20. An aqueous solution of a mixture of two inorganic salts, when treated with dilute HCl, gave a precipitate (P) and a filtrate (Q).The precipitate P was found to dissolve in hot water. The filtrate (Q) remained unchanged, when treated with H_2S in a dilute mineral acid medium.

However, it gave a precipitate (R) with H_2S in an ammoniaca medium.The precipitate R gave a coloured solution (S), when treated with H_2O_2 in an aqueous $NaOH$ medium.

The precipitae P contains

A. Pb^{2+}

B. Hg_2^{2+}

C. Ag^{+}

D. Hg^{2+}

Answer: A

View Text Solution

21. An aqueous solution of a mixture of two inorganic salts, when treated with dilute HCl, gave a precipitate (P) and a filtrate (Q).The precipitate P was found to dissolve in hot water. The filtrate (Q) remained unchanged, when treated with H_2S in a dilute mineral acid medium. However, it gave a precipitate (R) with H_2S in an ammoniaca

medium.The precipitate R gave a coloured solution (S), when treated with H_2O_2 in an aqueous $NaOH$ medium.

The coloured solution S contains

A. $Fe_2(SO_4)_3$

B. $CuSO_4$

C. $ZnSO_4$

D. Na_2CrO_4

Answer: D

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22. Which one of the following statement is correct?

A. From a mixed precipitate of $AgCl$ and Agl,ammonia solution dissolves only $AgCl$

B. Ferric ions gave a deep green precipitate on adding potassium ferrocyanide solution.

C. On boiling a solution having K^+, Ca^{2+} and HCO_3^- ions we get a precipitate of $K_2Ca(CO_3)_2$

D. Manganese salts give a violet borax bead test in the reducing flame

Answer: 1

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ALP

1. A red solid is insoluble in water.However it becomes soluble if some KI is added to water.Heating the red solid in a test tube results in liberation of some violet coloured fumes and droplets of a metal appear on the cooler parts of the test tube.The red solid is :

A. $(NH_4)_2Cr_2O_7$

B. HgI_2

C. HgO

D. Pb_3O_4

Answer: 2

View Text Solution

2. When a salt is heated with dilute H_2SO_4 and $KMnO_4$ solution, the pink colour of $KMnO_4$ is discharged, the salt is:

A. a sulphite

B. a carbonate

C. a nitrate

D. a bicarbonate

Answer: A

View Text Solution

3. Solution of a salt in dilute H_2SO_4 or acetic acid produces deep blue colour with starch iodide solution.The salt contains:

A. Br^-

B. I^-

C. NO_3^-

D. NO_2^-

Answer: D

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4. A test tube containing a nitrate and another containing a bromide and MnO_2 are treated with concentrated H_2SO_4.The reddish brown fumes evolved are passed through water.The water will be coloured by :

A. the nitrate

B. the bromide

C. both

D. none of the two

Answer: B

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5. An inorganic salt when heated with concentrated H_2SO_4 evolves a colourless pungent smelling gas but with concentrated H_2SO_4 and MnO_2 evolves a coloured pungent smelling gas which bleaches moist litmus paper.The coloured gas is:

A. NO_2

B. Cl_2

C. Br_2

D. I_2

Answer: B

View Text Solution

6. Chromyl chloride vapours are dissolved in water and acetic acid and barium acetate solution is added then:

A. the solution will remain colourless

B. the solution will become dark green

C. a yellow solution will be obtained

D. a yellow precipitate will be obtained

Answer: D

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7. When CS_2 layer containing both Br_2 and $I_2(2:1)$ is shaken with excess of chlorine (Cl_2) water, the violet colour due to l_2 disappears and a pale

yellow colour appears in the solution.The disappearance of violet colour and appearance of pale yellow colour is due to the formation of:

A. I_3^- and Br_2 respectively

B. HIO_3 and $BrCl$ resectively

C. ICI and $BrCl$ respectively

D. I^- and Br^- respectively

Answer: B

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8. A metal salt solution gives a yellow precipitate with silver nitrate.The precipitate dissolves in dilute nitric acid as well as in dilute ammonia solution.The solution contains :

A. bromide ions

B. iodide ions

C. phosphate ions

D. chromate ions

Answer: C

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9. Which of the following will not give positive chromyl chloride test ?

A. Copper chloride, $CuCl_2$

B. Mercuric chloride, $HgCl_2$

C. Zinc chloride, $ZnCl_2$

D. Anilinium chloride $C_6H_5NH_3Cl$

Answer: B

View Text Solution

10. A white sodium salt dissolves in water to give a solution which is neutral to litmus.When silver nitrate solution is added to the solution, a white precipitate is obtained which does not dissolve in dilute HNO_3 .The anion is

A. CO_3^{2-}

B. Cl^-

C. SO_3^{2-}

D. S^{2-}

Answer: B

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11. A one litre flask is full of reddish brown bromine fumes.The intensity of brown colour of vapour will not decrease appreciably on adding to the flask some:

A. pieces of marble

B. animal charcoal powder

C. carbon tetrachloride

D. carbonisulphide

Answer: A

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12. Identify the compound which turns black with ammonia solution.

A. Lead chloride

B. Mercurous chloride

C. Mercuric chloride

D. Silver chloride

Answer: B

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13. A white crystalline substance dissolves in water.On passing H_2S in this solution, a black precipitate is obtained.The black precipitate dissolves completely in hot HNO_3.On adding a few drops of concentrated H_2SO_4, a white precipitate is obtained which is soluble in ammonium acetate.The white precipitate is that of ,

A. $BaSO_4$

B. $SrSO_4$

C. $PbSO_4$

D. Ag_2SO_4

Answer: C

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14. The composition of golden spangles is:

A. $PbCrO_4$

B. Pbl_2

C. As_2S_3

D. $BaCrO_4$

Answer: B

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15. Select the incorrect statement(s).

A. Ammonium ions produce yellow colour solution with sodium hexanitrito-N-cobaltate (III).

B. Ammonia gas develops a brown colour on filter paper moistened with a solution of $MnCl_2$ and H_2O_2

C. Ammonium ions produce white precipitate with saturated sodium hydrogen tartrate solution.

D. Ammonium salts in presence of sodium hydroxide solution produces red precipitate with 4-nitrobenzene diazonium chloride reagent.

Answer: A,D

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16. Original solution of salt or mixture should not be prepared in concentrated HNO_3 because it:

A. is highly corrosive

B. oxidises H_2S to S in II^{nd} group.

C. undergoes disproportionation reaction

D. converts sulphide of Ba, Sr and Pb into insoluble sulphates

Answer: B,D

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17. White precipitate of $PbSO_4$ gets dissolved in:

A. concentrated H_2SO_4 on heating

B. concentrated $NaOH$

C. $(NH_4)_2CO_3$

D. Dilute HNO_3

Answer: A,B

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18. What final product(s) is/are formed in the following series of reactons ?

Concentrated borax solution + silver nitrate solution $\rightarrow$ Precipitate $\xrightarrow[\text{boiling}]{H_2O}$ Products (final)

A. Ag_3BO_3

B. Ag_2O

C. H_3BO_3

D. $AgBO_2$

Answer: B,C

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19. Which of the following sulphides do not dissolve in $50\,\%\ HNO_3$ but dissolve in aquaregia ?

A. CoS

B. NiS

C. CuS

D. HgS

Answer: A,B,D

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20. Which of the following statement(s) is/are correct ?

A. Yellow precipitated of silver arsenite is soluble in both nitric acid and ammonia

B. Potassium cyanide when added in very small quantity to copper sulphate solution, produces first yellow precipitate which quickly converts in to white precipitate.

C. Black precipitate of Bil_3 turns orange on heating with water.

D. White precipitate of $Bi(OH)_3$ turns yellowish brown, when boiled.

Answer: A,B,C

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21. The following can be used to regulate the concentration of OH^- ions for the scheme of basic radical analysis (III group)

A. NH_4NO_3

B. NH_4Cl

C. $(NH_4)_2SO_4$

D. $(NH_4)_2CO_3$

Answer: A,B

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22. Select the correct statement(s)

A. In group III, Fe^{3+} and Cr^{3+} can be differentiated by increasing NH_4^+ ion concentration

B. In V^{th}, Na_2CO_3 is added to precipitate out only the carbonates of Ba^{2+}, Sr^{2+} and Ca^{2+}

C. Like brown ring test, diphenylamine test is given only by salts containing NO_3^-

D. Sodium chloride on heating with aqueous solution of $K_2Cr_2O_7$ and concentrated H_2SO_4 produces deep vapour

Answer: A

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23. Which of the following statement(s) is/are not correct?

A. Nickel salts give rosy red precipitate with dimethyl glyoxime in excess of NH_4OH

B. $Fe(III)$ salts give red colour with potassium sulphocyanide

C. In nitroprusside the iron and NO exists as $Fe(III)$ and NO

D. $Mn(II)$ salts give white precipitate with $NaOH$ which turns brown on adding Br_2 water.

Answer: C

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24. Which of the following will give the same colour in oxidising flame as well as in the reducing flame in borax be test (when cold) ?

A. Chromium

B. Copper

C. Cobalt

D. Nickel

Answer: A,C

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25. $Ni + H_2SO_4$ (hot and concentrated) $\rightarrow X(g)$

The liberated gas (select the correct statement)

A. develops blue colour spots on the filter paper moistened with potassium iodate and strach solution

B. turns acidified $K_2Cr_2O_7$ solution green

C. produces black precipitate with lead acetate solution

D. reacts with Cl_2 water to produce an acid which gives white fumes with ammonia.

Answer: A,B,D

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26. $Co^{2+} + KCN$ (not in excess) $\rightarrow$ precipitate.

Select the correct statement(s) with respect to the precipitate.

A. It is yellow in colour

B. It is reddish-brown in colour

C. It dissolves in excess of the reagent forming a brown solution

D. It is obtained when brown solution (option C) is acidified with dilute HCl in the cold.

Answer: B,C,D

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27. Potassium ferrocyanide is used for testing

A. Cu^{2+} and Zn^{2+}

B. Fe^{3+} and Ca^{2+}

C. Ag^{+} and Zn^{2+}

D. Th^{4+} and Cu^{2+}

Answer: A,B,C,D

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28. Which of the following statements is/are correct ?

A. An aqueous solution of $Co(II)$ thiocyanate $(10\,\%$ freshly prepared) and mercuric nitrate solution taken in equal volumes on stirring the wall of the vessel with a glass rod produce deep-blue precipitate.

B. White precipitate of $Al(OH)_3$ is soluble in sodium hydroxide as well as in ammonia solution

C. Green precipitate of $Cr(OH)_3$ readily dissolves in excess of sodium hydroxide forming a green solution

D. Chromium (III) salts give green coloured borax bead in both oxidising and reducing flame.

Answer: A,C,D

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29. Which of the following imparts green/apple green colour to the Bunsen flame ?

A. Calcium chloride

B. Volatile boron trifluoride

C. Barium chloride

D. Ethyl borate

Answer: B,C,D

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30.

$CoCl_2 + KNO_2 + CH_3COOH \rightarrow [X] + H_2O + KCl + CH_3COOK + N$

(Unbalenced equation)

A. X is a yellow crystalline solid insoluble in water.

B. X is a green coloured compounds known as kinman's green

C. $IUPAC$ name of X is potassium hexanitrito-N-cobaltate (II)

D. The compound X is an inner orbital complex.

Answer: A,D

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31. How many of the following salts impart characteristic colours to the Bunsen flame ?

$NaCl, KCl, CuCl_2, BaCl_2, CaCl_2, SrCl_2, ZnCl_2, MgCl_2, AlCl_3$

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32. How many of the following liberate coloured vapour/gas with concentrated H_2SO_4?

$KCl(s) + K_2Cr_2O_7(s), KNO_2(s), Kl(s), KBr(s), KCl(s)$

$KBr(s) + MnO_2(s), KNO_3, KCl(s) + MnO_2, K_2SO_3$

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33. How many of the following pairs of ions can be separated by H_2S in dilute HCl?

Bi^{3+} and Sn^{4+}, Al^{3+} and Hg^{2+}, Cd^{2+} and Zn^{2+}, Fe^{3+} and Cu^{2+}, As^{3+} and Sb^{3+}

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34. Amongst the following, the total number of compounds soluble in concentrated NH_3 solution is:

(A)Ag_2CrO_4 , (B)$Cu(OH)_2.CuSO_4$, (C)$PbSO_3$, (D)$Al(OH)_3$, (E) $Ni(OH)_2$

(F)$Zn_3(PO_4)_2$, (G)$BaSO_4$, (H)$Bi(OH)_2NO_3$, (I)$Mn(OH)_2$

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35. An alcoholic solution of dimethylglyoxime is added to an aqueous solution of nickel(II) chloride.Slow addition of ammonium hydroxide led to the precipitation of a bright-red coloured metal complex.

Find out the number of hydrogen bonds present in the structure of the complex.

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36. $Fe^{2+}(aq) + NO_3^-(aq) + H_2SO_4(conc.) \rightarrow$ Brown ring

The brown ring is due to the formation of complex, $\left[Fe(H_2O)_5NO\right]SO_4$.

What is the oxidation state of iron in the complex ?

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37. An aqueous solution contains Hg^{2+}, Hg_2^{2+}, Pb^{2+}, Ag^+, Bi_{3+} and Cd^{2+}.Out of these, how many ions will produce white precipitate with dilule HCl ?

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38. What happen when 4-nitrobenzene diazonium chloride reagent reacts with an ammonium salt in the presence of sodium hydroxide solution ?

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39. (i)A black coloured compound (B) is formed on passing H_2S through the solution of a compound (A) in NH_4OH

(ii)(B) on treatment with HCl and potassium chlorate or aquaregia gives (A)

(iii)(A) on treatment with KCN gives a buff/reddish-brown coloured precipitate which dissolves in excess of this reagent forming a compound (C).

(iv)The compound (C) is changed into a compound (D) when its aqueous solution is boiled in air.

(v)The solution of (A) was treated with excess of $NaHCO_3$ & then with bromine water. On cooling & shaking for some time, a green colour of compound (E) is formed.No change is observed on heating.

Identify (A) to (E) and give chemical equations.

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Others

1. The carbonate of which of the following cation is soluble in water ?

A. Na^+

B. K^+

C. NH_4^+

D. Ca^{2+}

Answer: A,B,C

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2. SO_2 and CO_2 both turn lime water (X) milky, SO_2 also turns $K_2Cr_2O_7/H^+(Y)$ green while O_2 is soluble in pyrogallol (Z) turning it

black. These gases are to be detected in order by using these reagents. The order is:

A. (X),(Y),(Z)

B. (Y),(X),(Z)

C. (X),(Z),(Y)

D. The correct order cannot be predicted.

Answer: B

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3. Colourless salt (A)+dil.H_2SO_4 or $CH_3COOH + KI \rightarrow$ blue colour with starch. (A) can be

A. K_2SO_3

B. Na_2CO_3

C. NH_4NO_3

D. NH_4Cl

Answer: C

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4. Zinc pieces are added to acidified solution of SO_3^{2-} .Gas liberated can:

A. turn lead acetane paper black

B. turn lime water milky

C. give white precipitate with $AgNO_3$ solution

D. decolourize acidified $KMnO_4$

Answer: A,D

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5. A mixture when rubbed with dilute acid smells like vinegar. It contains:

A. sulphite

B. nitrate

C. nitrile

D. acetate

Answer: D

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6. A substance on treatment with dilute H_2SO_4 liberates a colourless gas which produces (I) turbidity with baryta water and (ii) turns acidified dichromate solution green. The reaction indicates the presence of :

A. CO_3^{2-}

B. S^{2-}

C. SO_3^{2-}

D. NO_2^-

Answer: C

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7. Which of the following combines with $Fe(II)$ ions to form a brown complex ?

A. N_2O

B. NO

C. N_2O_3

D. N_2O_4

Answer: B

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8. Which of the following statements is /are incorrect?

A. A filter paper moistened with cadmium acetate solution turn yellow, when brought in contact with H_2S gas.

B. Both carbonate ions as well as bicarbonate ions in the solutions, give reddish-brown precipitate with mercury (II) chloride.

C. Sulphites in presence of zinc, reacts with dilute H_2SO_4 to liberate SO_3 gas.

D. A filter paper moistened with KIO_3 and starch turns blue in contact with SO_2 vapours.

Answer: B,C

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9. Which of the following reagents turns white precipitate of $AgCl$ yellow?

A. $NaNO_3$

B. Na_3AsO_3

C. Na_3AsO_4

D. $NaCN$

Answer: B

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10. When a mixture of solid $NaCl$ and solid $K_2Cr_2O_7$ is heated with concentrated H_2SO_4 deep red vapours are obtained.This is due to the formation of:

A. chromous chloride

B. chromyl chloride

C. chromic chloride

D. chromic sulphate

Answer: B

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11. AgCl dissolves in ammonia solution giving

A. Ag^+, NH_4^+ and Cl^-

B. $Ag(NH_3)^+$ and Cl^-

C. $Ag_2(NH_3)^{2+}$ and Cl^-

D. $Ag(NH_3)_2^+$ and Cl^-

Answer: D

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12. A mixture upon along adding conc. H_2SO_4 gives deep red fumes. It may contain the anions pair :

A. $Cr_2O_7^{2-}$ and Cl^-

B. Br^- and $Cr_2O_7^{2-}$

C. NO_3^- and Cl^-

D. CrO_4^{2-} and NO_3^{2-}

Answer: A

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13. A solution of a salt in concentrated sulphuric acid H_2SO_4 acid produced a deep blue colour with starch iodide solution.The salt may be

A. chloride

B. carbonate

C. acetate

D. bromide

Answer: D

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14. A colouless solution of a compound gives a precipitate with $AgNO_3$ solution but no precipitate with a solution of Na_2CO_3. The action of concentrated H_2SO_4 on the compound liberates a suffocating reddish brown gas.

The compound is :

A. $Ba(CH_3COO)_2$

B. $CaCl_2$

C. Nal

D. $NaBr$

Answer: D

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15. When chlorine (Cl_2) water in excess is added to a salt solution containing chloroform, chloroform layer turns pale yellow.Salt contains:

A. Br^-

B. I^-

C. NO_3^-

D. S^{2-}

Answer: A

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16. An aqueous solution of salt containing an acidic radical X-reacts with sodium hypochlorite in neutral medium. The gas evolved produces blue black colour spot on the starch paper.The anion X^- is:

A. CH_3COO^-

B. Br^-

C. I^-

D. NO_2^-

Answer: C

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17. When chlorine water is added to an aqueous solution of potassium halide in the presence of chloroform, a colour is developed but on adding more of chlorine water the colour disappears, and a colourless solution is obtained.This test confirms the presence of the following in aqueous solution.

A. Iodide

B. Bromide

C. Chloride

D. Iodide and bromide

Answer: A

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18. Nitrates is confirmed by ring test.The brown colour of the ring is due to formation of:

A. ferrous nitrite

B. nitroso ferrous sulphate

C. ferrous nitrate

D. $FeSO_4.NO_2$

Answer: B

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19. Nitrates of all the metals except mercury and bismuth are:

A. coloured

B. unstable

C. soluble in water

D. insoluble in water

Answer: C

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20. Which of the following reagents can be used for making the distinction between $AgCl$ and Agl?

A. Sodium arsenite solution

B. Dilute ammonia solution

C. Potassium cyanide solution

D. Dilute HNO_3

Answer: A,B

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21. White ppt. of $PbSO_4$ is soluble in

A. ammonium acetate $(6M)$

B. dilute HCl

C. dilute H_2SO_4

D. none

Answer: A

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22. There are four test tubes containing dilute HCl, $BaCl_2$, $CdCl_2$ and KNO_3 soluitons.Which of the following reagents with help in the identification of $BaCl_2$?

A. $NaOH$

B. K_2CrO_4

C. $AgNO_3$

D. both (B) and (C)

Answer: B

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23. Nessler's reagent is

A. K_2HgI_4

B. $K_2HgI_4 + KOH$

C. $K_2HgI_2 + KOH$

D. $K_2HgI_4 + Ki$

Answer: B

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24. Ammonia/ammonium ion gives yellow precipitate with:

A. H_2PtCl_6

B. $HgCl_2$

C. $Na_3\left[Co(NO_2)_6\right]$

D. (A) and (C) both

Answer: D

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25. Ammonium salts on heating with slaked lime liberates a colourless gas (X).Identify the correct statement for gas (X).

A. (X) turns red litmus blue and produces dense white fumes in contact with dilute HCl

B. (X) turns filter paper moistened with mercurous nitrate black and gives intense blue coloured solution with $CuSO_4(aq)$

C. (X) when passed through Nessler's reagent produces a brown colour precipitate

D. All of these

Answer: D

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26. A metal nitrate reacts with Kl solution to give yellow precipitate which on addition of excess of more concentrated solution $(6M)$ of Kl dissolves forming a solution.The cation of metal nitrate is:

A. Hg_2^{2+}

B. Ag^+

C. Pb^{2+}

D. Cu^{2+}

Answer: C

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27. Three separate samples of a solution of a single salt gave these results. One formed a white precipitate with excess ammonia solution, one formed a white precipitate with dilute $NaCl$ solution and one formed a black precipitate with H_2S.The salt could be:

A. $AgNO_3$

B. $Pb(NO_3)_2$

C. $Hg(NO_3)_2$

D. $Mn(NO_3)_2$

Answer: B

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28. White precipitate of silver chloride is soluble in:

A. KCN solution (excess)

B. sodium thiosulphate solution (excess)

C. ammonia solution

D. concentrated solution of KCl

Answer: A,B,C,D

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29. Cu^{2+} and Ag^{+} are both present in the same solution.To precipitate one of the ions and leaves the other in solution, add

A. $H_2S(aq)$

B. $HCl(aq)$

C. $HNO_3(aq)$

D. $NH_4NO_3(aq)$

Answer: B

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30. Consider the following observation:

$M_{n+} + HCl$ (dilute) $\rightarrow$ white precipitate $\xrightarrow{\Delta}$ water soluble CrO_4^{2-} yellow precipitate.

The metal ion M^{n+} will be:

A. Hg^{2+}

B. Ag^{+}

C. Pb^{2+}

D. Sn^{2+}

Answer: C

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31. A white crystalline substance dissolves in water.On passing H_2S in this solution, a black precipitate is obtained.The black precipitate dissolves completely in hot HNO_3.On adding a few drops of concentrated H_2SO_4, a white precipitate is obtained.This precipitate is that of

A. $BaSO_4$

B. $SrSO_4$

C. $PbSO_4$

D. $CdSO_4$

Answer: C

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32. Sometimes yellow turbidity appears while passing H_2S gas even in slightly acidic medium in the absence of II group radicals. This is because:

A. sulphur is present in the mixture as impurity.

B. IV group radicals are precipitated as sulphides

C. of the oxidation of H_2S gas by some acid radicals

D. III group radicals are precipitated as hydroxides.

Answer: C

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33. H_2S in the presence of HCl precipitates II group but not IV group because:

A. HCl activates H_2S

B. HCl increase concentration of Cl^-

C. HCl decreases concentration of S^{2-}

D. HCl lowers the solubility of H_2S in solution.

Answer: C

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34. Yellow ammonium sulphide solution is a suitable reagent for the separation of

A. HgS and PbS

B. PbS and Bi_2S_3

C. Bi_2S_3 and CuS

D. CdS and As_2S_3

Answer: D

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35. In which of the following pairs the precipitates are red and black coloured respectively and both precipitates are soluble in excess Kl solution?

A. Hgl_2, Hg_2l_2

B. Hgl_2, Bil_3

C. Cu_2l_2, Agl

D. Cdl_2, Pbl_2

Answer: B

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36. Which one of the following salts will produce clear and transparent original solution in $2MHCl$?

A. Ag_2CO_3

B. $Pb(CO_3)_2$

C. Hg_2CO_3

D. $CuCO_3$

Answer: D

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37. A metal chloride original solution (i.e. $O.\ S$) on mixing with K_2CrO_4 solution give a yellow precipitate soluble in aqueous sodium

hydroxide.The metal may be:

A. mercury

B. iron

C. silver

D. lead

Answer: D

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38. Which of the following in insoluble in dil. HNO_3 but dissolves in aquaregia ?

A. HgS

B. PbS

C. Bi_2S_3

D. CuS

Answer: A

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39. When small amount of $SnCl_2$ is added to a solution of Hg^{2+} ions, a silky white precipitate is obtained.The silky white precipitate is due to the formation of:

A. Hg_2Cl_2

B. $SnCl_4$

C. Sn

D. Hg

Answer: A

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40. Which of the following reagents gives white precipitate with $Hg(NO_3)_2$ solution?

A. Cobalt (II) thiocyanate

B. Tin (II) chloride (excess)

C. ammonia solution

D. Potassium cyanide solution

Answer: C

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41. When excess of dilute NH_4OH is added to an aqueous solution of copper sulphate an intense blue colour is developed.This is due to the formation of:

A. $\left[Cu(NH_3)_6\right]^{2+}$

B. $Cu(OH)_2$

C. $\left[Cu(NH_3)_4\right]^{2+}$

D. $(NH_4)_2SO_4$

Answer: C

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42. A black sulphide is formed by the action of H_2S on:

A. cupric chloride

B. cadmium chloride

C. zinc chloride

D. ferric chloride

Answer: A

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43. Cu^{2+} ions will be reduced to Cu^{+} ions by the addition of an aqueous solution of:

A. Kl

B. KCl

C. $KSCN$

D. KCN

Answer: A,C,D

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44. When bismuth chloride is poured into a large volume of water the white precipitate produced is

A. $BiO.OH$

B. Bi_2O_3

C. $BiOCl$

D. $Bi(OH)_3$

Answer: C

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45. Which of the following is/are correctly matched ?

A. $Bil\downarrow \rightarrow$ Black

B. $Cu_2l_2\downarrow \rightarrow$ White precipitate

C. $Pbl_2\downarrow \rightarrow$ Yellow precipitate

D. $Hgl_2\downarrow \rightarrow$ Red percipitate

Answer: A,B,C,D

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46. When NH_4Cl is added to a solution of NH_4OH :

A. the dissociation of NH_4OH

B. the concentration of OH^- increases.

C. the concentrations of both OH^- an NH_4^+ increase.

D. the concentration of OH^- ion decreases.

Answer: D

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47. An original solution of an inorganic salt in dilute HCl gives a brown colouration with potassium hexacyanidoferrate (III) and reddish brown colouration with sodium acetate solution.The cation of the salt is:

A. NI^{2+}

B. Fe^{3+}

C. Cu^{2+}

D. none

Answer: B

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48. Intense blue precipitate of $Fe_4\left[Fe(CN)_6\right]_3$ and potassium hydroxide solution when mixed gives:

A. $K_2Fe\left[Fe(CN)_6\right]$-white precipitate

B. $Fe(OH)_3$-reddish -brown precipitate

C. $Fe(CN)_3$-reddish-brown precipitate

D. $KFe\left[Fe(CN)_6\right]$-Turnbull's blue

Answer: B

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49. Turnbull's blue is a compound.

A. ferricyanide

B. ferrous ferricyanide

C. ferrous cyanide

D. ferri ferrocyanide

Answer: B

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50. $Fe(OH)_3$ and $Cr(OH)_3$ precipitates can be completely separated by :

A. $Aq.\ NH_3$

B. HCl

C. $NaOH\ /\ H_2O_2$

D. H_2SO_4

Answer: C

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51. Ferric alum gives deep red colour with NH_4SCN due to the formation of :

A. $Al(SCN)_3$

B. $\left[Fe(SCN)_3\right]^-$

C. $Fe(SCN)_3$

D. none of these

Answer: C

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52. NH_4SCN can be used to test one or more out of $Fe^{3+}, Co^{2+}, Cu^{2+}$:

A. Fe^{3+} only

B. Co^{2+}, Cu^{2+} only

C. Fe^{3+}, Cu^{2+} only

D. All

Answer: D

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53. $K_4[Fe(CN)_6]$ can be used to detect one or more out of $Fe^{2+}, Fe^{3+}. Zn^{2+}, Ag^{+}, Ca^{2+}$:

A. only Fe^{2+}, Fe^{3+}

B. only $Fe^{3+}, Zn^{2+}, Cu^{2+}$

C. all but not Ca^{2+}

D. All of these

Answer: D

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54. To increase significantly the concentration of free Zn^{2+} ion is a solution of the complex ion $\left[Zn(NH_3)_4\right]^{2+}$

$Zn^{2+}(aq) + 4NH_3(aq) \Leftrightarrow \left[Zn(NH_3)_4\right]^{2+}(aq)$

Add to the solution some:

A. H_2O

B. $HCl(aq)$

C. $NH_3(aq)$

D. $NH_4Cl(aq)$

Answer: B

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55. CoS (black) obtained in group IV of salt analysis is dissolved in aqua regia and is treated with an excess of $NaHCO_3$ and then Br_2 water.An apple green coloured stable complex is formed. It is:

A. sodium cobaltocarbonate

B. sodium cobaltibromide

C. sodium cobalticarbonate

D. sodium cobaltobromide

Answer: C

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56. A metal salt solution when treated with dimethyl glyoxime and NH_4OH give a rose red complex.The metal is

A. Ni

B. Zn

C. Co

D. $Mn.$

Answer: A

Watch Video Solution

57. An aqueous solution of colourless metal sulphate M, gives a white precipitate with NH_4OH.This was soluble in excess of NH_4OH. On passing H_2S through this solution a white precipitate is formed.The metal M in the salt is:

A. Ca

B. Ba

C. Al

D. Zn

Answer: D

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58. Which one of the following ions does not give borax bead test :

A. Cr^{3+}

B. Cu^{3+}

C. Mn^{2+}

D. Zn^{2+}

Answer: D

Watch Video Solution

59. Which of the following compound is formed in borax bead test ?

A. Orthoborate

B. Metaborate

C. Double oxide

D. Tetraborate

Answer: B

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60. White precipitate of $Zn(OH)_2$ dissolves in:

A. sodium hydroxide solution

B. acid solution

C. ammonia solution

D. solution of ammonium salts

Answer: A,B,C,D

Watch Video Solution

61. Aqueous Solution of $BaBr_2$ gives yellow precipitate with:

A. K_2CrO_4

B. $AgNO_3$

C. $(CH_3COO)_2Pb$

D. (A) and (B) both.

Answer: D

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62. The addition of $K_2CO_3(aq)$ to the following solution is expected to produce a precipitate in every case but that one which does not produce precipitate is:

A. $BaCl_2(aq)$

B. $CaCr_2(aq)$

C. $Na_2SO_4(aq)$

D. $Pb(NO_3)_2(aq)$

Answer: C

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63. An aqueous solution of salt gives salt precipitate with $AgNO_3$ solution as well as with dilute H_2SO_4. It may be

A. $Pb(NO_3)_2$

B. $Ba(NO_3)_2$

C. $BaCl_2$

D. $CuCl_2$

Answer: C

Watch Video Solution

64. If crimson flame is given when an inorganic mixture is tested by flame test, it may be due to the presence of

A. potassium

B. strontium

C. barium

D. calcuim

Answer: B

Watch Video Solution

65. A brick red colour is imparted to Bunsen flame by a :

A. Ca salt

B. Sr salt

C. Na salt

D. Co salt

Answer: A

Watch Video Solution

66. The presence of magnesium is confirmed in the qualitative analysis by:

A. titan yellow solution $+2MNaOH$ solution

B. disodium hydrogen phosphate $+NH_4Cl + NH_3(aq)$

C. magneson (l) reagant

D. All of these

Answer: D

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67. Which of the following gives a precipitate with $Pb(NO_3)_2$ but not with $Ba(NO_3)_2$?

A. Sodium chloride

B. Sodium sulphate

C. Disodium hydrogen phosphate

D. Sodium chromate

Answer: B,C

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68. Mg is not precipitated in V group because:

A. $MgCO_3$ is soluble in water.

B. K_{sp} of $MgCO_3$ is high.

C. $MgCO_3$ is soluble in NH_4OH

D. None

Answer: B

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69. Statement-1:Baryta water becomes turbid on passing CO_2 gas through it but turbidity becomes clear on passing more CO_2 gas.

Statement-2 : Carbonates give yellowish white precipitate with silver nitrate solution.The precipitate becomes yelllow or brown on heating.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: B

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70. Statement-1:A solution containing S^{2-} ions gives purple/violet colour with sodium nitroprusside solution in alkaline medium.

Statement-2 :Sodium sulphide gives black precipitate with silver nitrate solution.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: B

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71. Statement-1 :Acidified $K_2Cr_2O_7$ solution becomes green when SO_2 gas is passed through it.

Statement-2 :This is an redox reaction.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: B

Watch Video Solution

72. Statement-1 :White crystalline precipitate of silver sulphite dissolves, if sulphite ions are added in excess

Statement-2 :Sulphite ions decolourise the pink colour of acidified $KMnO_4$

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: B

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73. Statement-1 :Nessler's reagent gives a brown precipitate with aqueous ammonia as well as with ammonium salts.

Statement-2 :Aqueous ammonia gives a brown precipitate with a solution of manganese (II) chloride and hydrogen peroxide.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: B

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74. Statement-1 :Cu^{2+} and Cd^{2+} ions form complexes with excess of potassium cyanide solution.

Statement-2 : On passing H_2S gas, complex $\left[Cu(CN)_4\right]^{3-}$ is not effected but $\left[Cd(CN)_4\right]^{2-}$ gives yellow precipitated.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: B

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75. Statement-1 :A solution of $BiCl_3$ in concentrated HCl when diluted with water gives white precipitate.

Statement-2 :$BiCl_3$ forms insoluble BiO^+Cl^- when diluted with a large quantity of water.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: A

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76. Statement-1:When H_2S gas is passed into an aqueous solution of $ZnCl_2$, Zn^{2+} ions are completely precipitated as zinc sulphide.

Statement-2 :Zinc sulphide is soluble in solutions of caustic alkali as well as in dilute HCl.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: E

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77. Statement -1 :An original solution containing excess of Ni^{2+} ions gives a yellow coloured solution with potassium cyanide solution.

Statement-2 :A solution of Ni^{2+} ions gives red precipitate with dimethylglyoxime solution just made alkaline with ammonia.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: B

Watch Video Solution

78. Statement-1 : V group basic radicals are precipitated as their carbonates by $(NH_4)_2CO_3$ in presence of ammonia or ammonium chloride.

Statement-2 :Aqueous ammonia maintains the pH of the solution basic.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: B

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79. Statement-1 : In dilute solution of strontium ions, yellow precipitate of $SrCrO_4$ is formed with CrO_4^{2-} ions.

Statement-2 :The $SrCrO_4$ precipitate is appreciably soluble in water, therefore, no precipitation occurs when water is taken in large quantity.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: D

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80. Statement-1 :White precipitate of $Mg(OH)_2$ is insoluble in excess of sodium hydroxide but readily soluble in solution of ammonium salts.

Statement-2 :$Mg(OH)_2$ is very sparingly soluble in water.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: B

Watch Video Solution

81. Statement-1 :White precipitate of zinc phosphate in soluble in ammonia.

Statement-2 :Zinc phosphate form a soluble complex with ammonia.

A. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is correct explanation for STATEMENT-1

B. STATEMENT-1 is true, STATEMENT-2 is true and STATEMENT-2 is not correct explanation for STATEMENT-2

C. STATEMENT-1 is true, STATEMENT-2 is false

D. STATEMENT-1 is false, STATEMENT-2 is true

Answer: A

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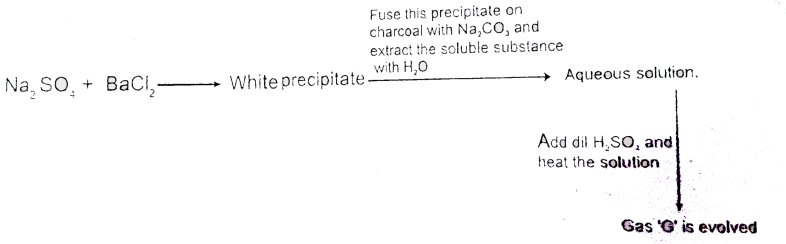

82.

The gas $'G'$ will show which of the following properly ?

A. It turns lead acetate filter paper black.

B. It turns acidified $K_2Cr_2O_7$ filter paper green.

C. It produces purple colouration on filter paper moistened with sodium nitroprusside already made alkaline with sodium hydroxide.

D. All of these

Answer: D

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83. Condsider the following reaction , Nitrite+Acetic acid +Thiourea $\rightarrow N_2 \uparrow + SCN^- + 2H_2O$ Formation of the product in the above reaction can be identified by:

A. $FeCl_3$ / dilute HCl, when blood red colour appears.

B. $FeCl_3$ / dilute HCl, when blue colour appears.

C. $K_2Cr_2O_7 / HCl$, when green colour appear.

D. $KMnO_4 / HCl$, when colourless solution is formed.

Answer: A

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84. White precipitate of $AgCl$ turns to greyish or black when:

A. reacts with Na_3AsO_4

B. exposed to sunlight

C. reacts with K_2CrO_4

D. reacts with concentrated HCl

Answer: B

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85. An aqueous solution of compound $'A'$ gives white precipitate with $2MHCl$.The precipitate becomes black on addition of aqueous NH_3 due to formation of $'B'$.$'B'$ dissolves in aquaregia. $'A'$ and $'B'$ are:

A. Hg^{2+} and $HgCl_2$

B. Hg_2^{2+} and Hg_2Cl_2

C. Hg^{2+} and $Hg(NH_2)Cl + Hg$

D. Hg_2^{2+} and $Hg(NH_2)Cl + Hg$

Answer: D

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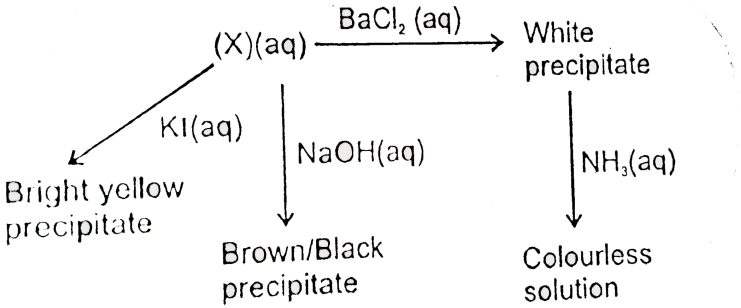
86. A compound (X) reacts in the following ways.



The compound (X) is likely to be

A. $Pb(NO_3)_2$

B. $CaCrO_4$

C. $Hg(NO_3)_2$

D. $AgNO_3$

Answer: D

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87. To a solution of a substance, gradual addition of ammonium hydroxide results in a brownish black precipitate which does not dissolve in excess of NH_4OH.However, when Kl (not in excess) is added to the original solution, a green precipitate is formed. The solution contained :

A. Lead salt

B. Silver salt

C. Mercurous salt

D. Copper salt.

Answer: C

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88. Black precipitate of copper sulphide dissolves in:

A. KCN solution

B. sodium sulphide solution

C. sodium hydroxide

D. boiling dilute (M) sulphuric acid.

Answer: A

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89. Which of the following metal salts gives a red and opaque borax bead in the reducing flame (in cold)?

A. Ni

B. Fe

C. Cu

D. Mn

Answer: C

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90. Which one among the following pairs of ions cannot be separated by H_2S in dilute hydrochloric acid ?

A. Bi^{3+}, Sn^{4+}

B. Al^{3+}, Hg^{2+}

C. Zn^{2+}, Cu^{2+}

D. Ni^{2+}, Cu^{2+}

Answer: A

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91. The reagents, NH_4Cl and aqueous NH_3 will precipitate

A. Ca^{2+}

B. Al^{3+}

C. Mg^{2+}

D. Zn^{2+}

Answer: B

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92. In the precipitation of the iron group in qualitative analysis, ammonium chloride is added before adding ammonium hydroxide to

A. decrease concentration of OH^- ions

B. prevent interference by phosphate ions

C. increase concentration of Cl^- ions

D. increase concentration of NH_4^+ ions

Answer: A

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93. Which one of the following can be used in place of NH_4Cl for the identification of the third group radicals ?

A. NH_4NO_3

B. $(NH_4)_2SO_4$

C. $(NH_4)_2CO_3$

D. $NaCl$

Answer: A

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94. Which one of the following metal salts produces a blue coloured bead in cobalt nitrate charcoal cavity test ?

A. Zn^{2+}

B. Mg^{2+}

C. Sn^{2+}

D. Al^{3+}

Answer: D

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95. Which of the following is correct ?

A. $AgCl(s) + Na_3AsO_3 \rightarrow$ colourless solution

B. $FeCl_3(aq) + K_4Fe(CN)_6 \rightarrow$ brown precipitate

C. $FeCl_3(aq) + K_3Fe(CN)_6 \rightarrow$ brown colouration

D. $CuSO_4(aq) + KCN(\text{excess}) \rightarrow$ blue colouration.

Answer: C

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96. Fe^{3+} does not give prussian blue colour with $K_4\left[Fe(CN)_6\right]$ but on its reaction with (X), prussian blue colour appears (X) can be:

A. MnO_4^- / H^+

B. $Zn / NaOH$

C. $NH_3(aq)$

D. all true

Answer: A

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97. When HNO_3 is added to sodium ferrocyanide, which of the following observation is observed ?

A. $NaFe\left[Fe(CN)_6\right]$ is produced.

B. $Fe_4\left[Fe(CN)_6\right]_3$ is formed.

C. $Fe_3\left[Fe(CN)_6\right]_2$ is formed.

D. $Na_2\left[Fe(CN)_5(NO)^+\right]^{2-}$ is formed.

Answer: D

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98. What product is formed by mixing the solution of $K_4\left[Fe(CN)_6\right]$ with the solution of $FeCl_2$?

A. Ferro ferricyanide

B. Ferric ferrocyanide

C. Ferric ferricyanide

D. None

Answer: D

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99. Select the correct statement with respect to Fe^{3+} ions.

A. Iron (III) ions react with H_2S in acidic solution to give a black precipitate of Fe_2S_3

B. Iron (III) ions react with ammonium sulphide to give the black precipitate of Fe_2S_3

C. Iron (III) ions react with ammonium thioxyanate solution to produce deep red colouration.

D. All of these

Answer: C

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100. Which one of the following compounds on reaction with Na_2O_3 in alkaline medium gives yellow colour solution?

A. $Cr(OH)_3$

B. $Zn(OH)_2$

C. $Al(OH)_3$

D. none of these

Answer: A

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101. A dark green bead in the borax bead test (in oxidising flame) indicates the presence of:

A. Cr^{3+}

B. Mn^{2+}

C. Co^{2+}

D. Ni^{2+}

Answer: A

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102. Which of the following cation does not give red colour precipitate/solution with dimethylglyoxime (DMG) in alkaline solution?

A. Zn^{+2}

B. Ni^{+2}

C. Fe^{2+}

D. both (A) and (C)

Answer: A

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103. A suspension containing insoluble substances ZnS, MnS, HgS, Ag_2S and FeS, is treated with $2NHCl$.On filtering, the filtrate contains appreciable amounts of which one of the following ?

A. Zinc and mercury

B. Silver and iron

C. Maganese and mercury

D. Zinc, manganese and iron

Answer: D

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104. An aqueous solution contains both Al^{3+} & Zn^{2+}.To this solution NH_4OH is added in excess.

A. Only $Al(OH)_3$ will be precipitated.

B. Only $Zn(OH)_2$ will be precipitated.

C. Both will be precipitated.

D. No precipitate will appear.

Answer: A

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105. A metal M and its compound can give the following observable changes in a consequence of reactions

$$M \xrightarrow[HNO_3]{\text{dilute}} [\text{Colourless Solutions}] \xrightarrow[NaOH]{\text{aqueous}} [\text{White Precipitate}] \xrightarrow[\text{NaOH(aq)}]{\text{excess}}$$

A. Mg

B. Pb

C. Zn

D. Sn

Answer: C

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106. In fifth group, $(NH_4)_2CO_3$ is added to precipitate out the carbonates. We do not add Na_2CO_3 because:

A. $CaCO_3$ is soluble in Na_2CO_3

B. Na_2CO_3 increases the solubility of fifth group carbonates

C. $MgCO_3$ will be precipitated out in fifth group

D. none

Answer: C

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107. A metal salt solution forms a yellow precipitate with potassium chromate in acetic acid, a white precipitate with dilute H_2SO_4 but gives no precipitate with sodium chloride or iodide, it is

A. lead carbonate

B. basic lead carbonate

C. barium carbonate

D. strontium carbonate

Answer: C

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108. Na_2SO_4 and Na_2S can be distinguished from each other by using:

A. dilute H_2SO_4

B. acidified $KMnO_4$ solution

C. sodium nitroprusside solution

D. cadmium acetate solution

Answer: A,B,C,D

Watch Video Solution

109. Which of the following anion (s) evolve(s) reddish brown gas with concentrated H_2SO_4?

A. Br^-

B. NO_3^-

C. SO_3^{2-}

D. I^-

Answer: A,B

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110. Ammonium molybdate test is used for the estimation of:

A. PO_4^{3-}

B. Mg^{2+}

C. As_4^{3-}

D. CH_3COO^-

Answer: A,C

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111. Cu^{2+} ions give white precipitate with :

A. potassium iodide solution

B. potassium thiocyanate and saturated solution of SO_2.

C. excess potassium cyanide solution

D. potassium hydroxide solution

Answer: A,B

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112. Which of the following statements is /are true ?

A. Ag^+ ions do not give white precipitate with excess of concentrated HCl

B. Cu^{2+} ions produce a white precipitate when KCN solution is added in a small quantity.

C. Hg^{2+} ions give deep blue precipitate with cobalt acetate and ammonium thiocyanate.

D. Black precipitate of Bil_3 turns orange when heated with water.

Answer: A,B,C,D

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113. KI solution is the reagent for:

A. Hg^{2+}

B. Pb^{2+}

C. Ag^{+}

D. Cu^{2+}

Answer: A,B,C,D

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114. Which of the following cations form(s) black precipitate(s) with $H_2S(g)$?

A. Cu^{2+}

B. Sb^{3+}

C. Pb^{2+}

D. Bi^{3+}

Answer: A,C,D

Watch Video Solution

115. Borax bead test is given by :

A. Co^{2+}

B. Zn^{2+}

C. Cu^{2+}

D. Ni^{2+}

Answer: A,C,D

Watch Video Solution

116. Concentrated aqueous ammonia dissolve(s) which of the following completely ?

A. $AgCl$

B. $AgBr$

C. Ag_2CrO_4

D. AgI

Answer: A,B,C

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117. $Hg_2l_2 \downarrow (\text{green}) \xrightarrow[\text{with}H_2O]{\text{boiled}}$ products

Which of the following statement is correct with respect to the products

?

A. Black precipitate of mercury (I) oxide is formed.

B. Voilet colour gas is evolved.

C. Red precipitate of Hgl_2 is formed.

D. Mercury is obtained.

Answer: C,D

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118. Which of the following statement(s) is /are false ?

A. Fe^{3+} gives red precipitate with dimethyl glyoxime in alkaline solution.

B. Cu^{2+} ion with potassium iodide solution gives a dirty brownish white precipitate which turns white on adding hypo solution.

C. A filter paper soaked in mercurous nitrate turns black in contact with ammonia gas.

D. Ag_2O does not dissolve in nitric acid and ammonia solution.

Answer: A,D

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119. Which of the following statement(s) is/are true?

A. Titan yellow solution gives red colouration with a neutral solution containing Mg^{2+} ions

B. Solution of nitrile is decomposed by sulphamic acid.

C. Fe^{2+} ions give brown colour precipitate with $\left[Fe(CN)_6\right]^{3-}$ ions solution.

D. Green precipitate of $Cr(OH)_3$ is soluble in Na_2O_2

Answer: B,D

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120. Which of the following is/are correct for potassium ferrocyanide ?

A. It gives a brown precipitate with Cu^{2+} ions.

B. It gives a white precipitate of mixed salt with Ca^{2+} ions.

C. It in excess gives a bluish white/white precipitate with Zn^{2+}

D. It develops a deep red colouration with Fe^{3+}

Answer: A,B,C

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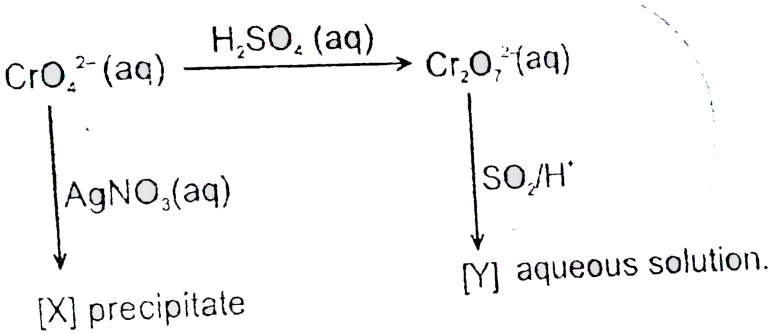
121. Consider the reactions shown below:



Which of the following statement (s) is/are correct?

A. $[X]$ is a yellow coloured precipitate.

B. $[X]$ is soluble in ammonia solution

C. $[Y]$ gives green coloured solution with excess of sodium hydroxide solution.

D. The conversion of $Cr_2O_7^{2-}$ to $[Y]$ is an redox reaction.

Answer: B,C,D

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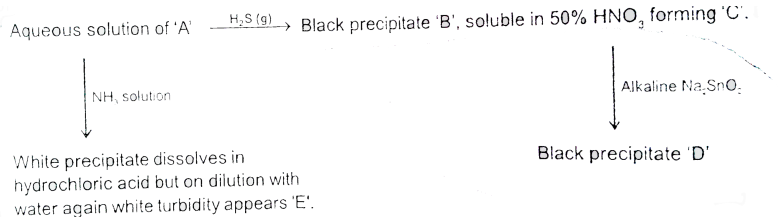

122.

Moreover, the salt $'A'$ on heating with solid $K_2Cr_2O_7$ and concentrated H_2SO_4 produces deep red vapours which dissolve in sodium hydroxide solution forming a yellow solution. This yellow solution gives yellow precipitate with $Ba\left((NO)_3\right)_2$ solution.

On the basis of the aforesaid characteristic informations answer the following question :

Reaction involved in comprehension :

$2Bi^{3+}(A) + 3H_2S \xrightarrow{H+} Bi_2S_3 \downarrow (\text{black})(B) + 6H^+$

$Bi_2S_3 + 8HNO_3 \rightarrow 2Bi(NO_3)_3(C) + 2NO + 3S + 4H_2O$

$Bi^{3+} + 3OH^- \xrightarrow{NaOH} Bi(OH)_3 \downarrow (\text{white}), 2Bi(OH)_3(\text{white}) + 3\left[Sn(OH\right.$

$Bi^{3+} + 3OH^- \xrightarrow{Na_4OH} Bi(OH)_3 \downarrow (\text{white}), Bi(OH)_3 daar(\text{white}) + 3HC$

$BiCl_3 + H_2O \rightarrow BiOCl \downarrow (\text{bismuth oxychloride})(E) + 2HCl$

$4NaCl + K_2Cr_2O_7 + 3H_2SO_4(\text{conc.}) \rightarrow 2CrO_2Cl_2(\text{deep red vapours}) + 2$

$CrO_2Cl_2 + 4OH^- \rightarrow CrO_4^{2-} + 2Cl^- + 2H_2O$

$CrO_4^{2-} + BaCrO_4 \downarrow$ (yellow)

Acidified solution of $'A'$ on treatment with Kl gives black precipitate $'F'$ which dissolves in excess of reagent forming the coloured compound $'G'$.The chemical composition of $'F'$ and $'G'$ are respectively:

A. Hgl_2 and $[Hgl_4]^{2-}$

B. Pbl_2 and $[Pbl_4]^{2-}$

C. Bil_3 and $[Bil_4]^{-}$

D. Cu_2l_2 and $[Cul_4$

Answer: C

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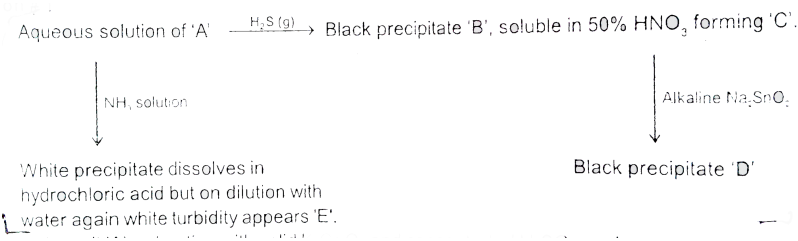
123.



Moreover, the salt $'A'$ on heating with solid $K_2Cr_2O_7$ and concentrated

H_2SO_4 produces deep red vapours which dissolve in sodium hydroxide solution forming a yellow solution. This yellow solution gives yellow precipitate with $Ba\left((NO)_3\right)_2$ solution.

On the basis of the aforesaid characteristic informations answer the following question :

Reaction involved in comprehension :

$2Bi^{3+}(A) + 3H_2S \xrightarrow{H+} Bi_2S_3 \downarrow (\text{black})(B) + 6H^+$

$Bi_2S_3 + 8HNO_3 \rightarrow 2Bi(NO_3)_3(C) + 2NO + 3S + 4H_2O$

$Bi^{3+} + 3OH^- \xrightarrow{NaOH} Bi(OH)_3 \downarrow (\text{white}), 2Bi(OH)_3(\text{white}) + 3\left[Sn(OH\right.$

$Bi^{3+} + 3OH^- \xrightarrow{Na_4OH} Bi(OH)_3 \downarrow (\text{white}), Bi(OH)_3 daar(\text{white}) + 3HCl$

$BiCl_3 + H_2O \rightarrow BiOCl \downarrow (\text{bismuth oxychloride})(E) + 2HCl$

$4NaCl + K_2Cr_2O_7 + 3H_2SO_4(\text{conc.}) \rightarrow 2CrO_2Cl_2(\text{deep red vapours}) + 2$

$CrO_2Cl_2 + 4OH^- \rightarrow CrO_4^{2-} + 2Cl^- + 2H_2O$

$CrO_4^{2-} + BaCrO_4 \downarrow$ (yellow)

The black precipitate $'F'$ on heating with water produces :

A. $Hg(OH)_2$

B. $BiOl$

C. $BiO.OH$

D. $CuO.OH$

Answer: B

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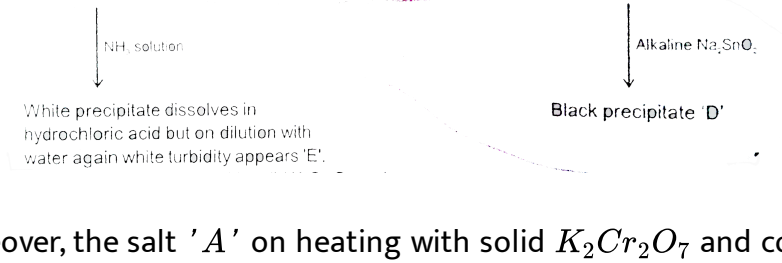
124.



Moreover, the salt $'A'$ on heating with solid $K_2Cr_2O_7$ and concentrated H_2SO_4 produces deep red vapours which dissolve in sodium hydroxide solution forming a yellow solution. This yellow solution gives yellow precipitate with $Ba\left((NO)_3\right)_2$ solution.

On the basis of the aforesaid characteristic informations answer the following question :

Reaction involved in comprehension :

$2Bi^{3+}(A) + 3H_2S \xrightarrow{H+} Bi_2S_3 \downarrow (\text{black})(B) + 6H^+$

$Bi_2S_3 + 8HNO_3 \rightarrow 2Bi(NO_3)_3(C) + 2NO + 3S + 4H_2O$

$Bi^{3+} + 3OH^- \xrightarrow{NaOH} Bi(OH)_3 \downarrow (\text{white}), 2Bi(OH)_3(\text{white}) + 3\left[Sn(OH\right.$

$Bi^{3+} + 3OH^- \xrightarrow{Na_4OH} Bi(OH)_3 \downarrow (\text{white}), Bi(OH)_3 daar(\text{white}) + 3HCl$

$BiCl_3 + H_2O \rightarrow BiOCl \downarrow (\text{bismuth oxychloride})(E) + 2HCl$

$4NaCl + K_2Cr_2O_7 + 3H_2SO_4(\text{conc.}) \rightarrow 2CrO_2Cl_2(\text{deep red vapours}) + 2$

$CrO_2Cl_2 + 4OH^- \rightarrow CrO_4^{2-} + 2Cl^- + 2H_2O$

$CrO_4^{2-} + BaCrO_4 \downarrow$ (yellow)

Which of the following statements is incorrect ?

A. The black precipitate $'D'$ is of bismuth.

B. The black precipitate $'D'$ is of $Hg + Hg(NH_2)NO_3$

C. Aqueous solutin of $'A'$ gives yellow precipitate with freshly prepared $10\,\%$ solution of pyrogallol.

D. Aqueous solution of $'A'$ gives red precipitate with $8-$ hydroxyquinoline $(5\,\%)$ and potassium iodide $(6M)$ in acidic medium.

Answer: B

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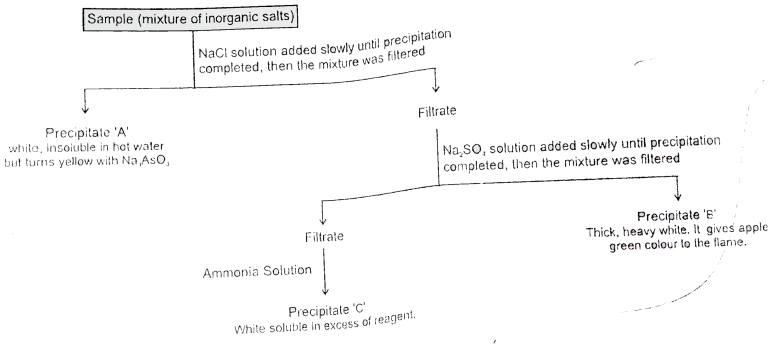
125. A student was given a sample of colourless solution containing three cations and was asked to identify the cations. Student carried out a series of reactions as given below.

Precipitates $'A'$, $'B'$ and $'C'$ are respectively:



A. $Al(OH)_3$, $BaSO_4$ and $AgCl$

B. $AgCl$, $BaSO_4$ and $Zn(OH)_2$

C. $AgCl$, $Ca(OH)_2$ and $ZnSO_4$

D. $ZnCl_2$, $BaSO_4$ and $Al(OH)_3$

Answer: B

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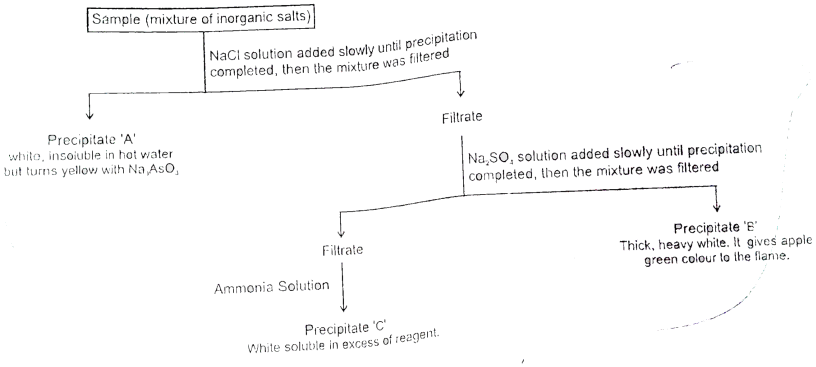
126. A student was given a sample of colourless solution containing three cations and was asked to identify the cations. Student carried out a series of reactions as given below.

White precipitate $'A'$ is not soluble in:



A. NH_3

B. $2MHCl$

C. KCN

D. $Na_2S_2O_3$

Answer: B

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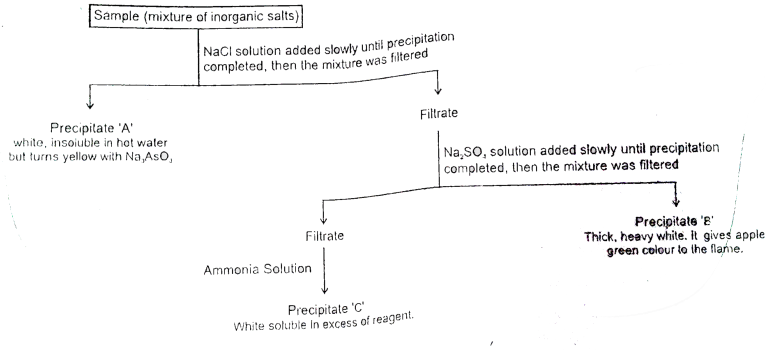
127. A student was given a sample of colourless solution containing three cations and was asked to identify the cations. Student carried out a series of reactions as given below.

Which of the following statements is correct ?



A. Precipitate $'C'$ gives Rinmann's green test.

B. Precipitate $'B'$ is appreciably soluble in boiling concentrated H_2SO_4

C. Precipitate (A) on exposure to sunlight or ultraviolet radiations turns black.

D. All of these

Answer: D

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128. $[X] + H_2SO_4 \rightarrow [Y]$ a colourless gas with irritating smell, $[Y] + K_2Cr_2O_7 + H_2SO_4 \rightarrow$ green solution.

$[X]$ and $[Y]$ are respectively :

A. SO_3^{2-}, SO_2

B. Cl^-, HCl

C. S^{2-}, H_2S

D. CO_3^{2-}, CO_2

Answer: A

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