CHEMISTRY

BOOKS - UNIVERSAL BOOK DEPOT 1960 CHEMISTRY (HINGLISH)

ANALYTICAL CHEMISTRY

Ordinary Thinking Objective Questions Preliminary Test

1. The composition of golden spangles is

A. $PbCrO_4$

B. PbI_2

C. As_2S_3

D. $BaCrO_4$

Answer: B

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2. In borax bead test which compound is formed ?

A. Meta borate

B. Double oxide

C. Ortho borate

D. Tetra borate

Answer: A

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3. The metal that does not give the borax bead test is

A. Cr

B. Ni

C. Na

D. Mn

Answer: C

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4. Which metal salt gives a violet coloured bead in the borax bead test ?

A. Fe^{2+}

B. Ni^{2+}

C. Co^{2+}

D. Mn^{2+}

Answer: D

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5. A precipitate of calcium oxalate will not dissolve in

A. HCl

B. HNO_3

C. Aqua-regia

D. Acetic acid

Answer: D

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6. A colourless gas with smell of rotten fish is

A. H_2S

B. PH_3

C. SO_2

D. None of these

Answer: B

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7. The alkaline earth metal that imparts apple green colour to the bunsen flame when introduced in it in the form of its chloride is

A. Barium

B. Strontium

C. Calcium

D. Magnesium

Answer: A

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8. The most that does not give the borax bead test

A. Chromium

B. Nickel

C. Lead

D. manganese

Answer: C

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Ordinary Thinking Objective Questions Preliminary Test

1. The colour of the borax bead is due to the formation of a/an

A. Glass like metal metaborate bead

B. Hard boric oxide crystal

C. Opaque metal hexaborate bead

D. Glass-like metal orthoborate bead

Answer: A

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2. The radical can be confirmed by Borax bead test is

A. Mg^{2+}

B. Ca^{2+}

C. Cu^{+}

D. Cu^{2+}

Answer: D

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3. Sodium borate on reaction with conc. H_2SO_4 and C_2H_5OH gives a compound A which burns with a green edged flame. The compound A is

A. $H_2B_4O_7$

B. $(C_2H_5)_2B_4O_7$

C. H_3BO_3

D. $(C_2H_5)_3BO_3$

Answer: D

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4. Blue borax bead is obtained with

A. Zn

B. Cobalt

C. Chromium

D. Fe

Answer: B

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5. Which one of the following cations gives a brick red flame by flame test

A. Ba^{2+}

B. Sr^{2+}

C. Ca^{2+}

D. Zn^{2+}

Answer: C

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6. Which of the following is coloured compound?

A. CuF_2

B. CuI

C. $NaCl$

D. $MgCl_2$

Answer: A

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7. Which one of the following metals will give blue ash when its salt is heated with Na_2O_3 solid and $Co(NO_3)_2$ on a charcoal piece?

A. Cu

B. Mg

C. Al

D. Zn

Answer: C

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8. Which of the following imparts green color to the burner flame?

A. $B(Ome)_3$

B. $Na(OMe)$

C. $Al(OPr)_3$

D. $Sn(OH)_2$

Answer: A

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9. In laboratory burners, we use

A. Producers gas

B. Oil gas

C. Gobar gas

D. Coal gas

Answer: B

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10. A mixture of salts $(Na_2SO_3 + K_2Cr_2O_7)$ in a test tube is treated with dil. H_2SO_4 and resulting gas is passed through lime-water. Which of the following observations is correct about this test

A. Solution in test tube becomes green and lime-water turns milky

B. Solution in test tube is colourless and lime-water turns milky

C. Solution in test becomes green and lime-water remains clear

D. Solution in test tube remains clear and lime-water also reamains clear.

Answer: A

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11. MnO_2 and H_2SO_4 added to NaCl, the greenish yellow gas liberated is

A. Cl_2

B. NH_3

C. N_2

D. H_2

Answer: A

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12. What volume of a solution of hydrochloric acid containing $73g$ acid per litre would sufficient for the exact neutralisation of sodium hydroxide obtained by allowing $0.46g$ of metallic sodium to act upon water.

A. 10 ml

B. 15 ml

C. 20 ml

D. 8 ml

Answer: A

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13. Neutral ferric chloride is added to the aqueous solution of acetate. The blood red colour is obtained, it is due to the compound

A. $Fe(OH)_2$

B. $Fe(OH)_3$

C. $Fe(CH_3COO)_3$

D. $Fe(OH)_2(CH_3COO)$

Answer: C

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14. Mark the gas which turns lime water milky

A. H_2S

B. SO_2

C. Cl_2

D. CO_2

Answer: B::D

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15. Assertion : Change in colour of the acidic solution of breath is used as a test for drunken driver.

Reason : Change in colour is due to complexation of alcohol with potassium dichromate.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. if both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: C

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Ordinary Thinking Objective Questions Wet Test For Acid Radical

1. 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_5

Answer: B

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2. A brown ring appears in the test for

A. Nitrate

B. Nitrite

C. Bromide

D. Iron

Answer: A

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3. S^{2-} and SO_3^{2-} can be distinguished by using:

A. $(CH_3COO)_2Pb$

B. $Na_2\left[Fe(CN)_5NO\right]$

C. both (a) and (b)

D. None of these

Answer: C

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4. _____is formed when potassium iodide is heated with conc. H_2SO_4

A. HI

B. I_2

C. HIO_3

D. KIO_3

Answer: B

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5. A white solid is first heated with dil H_2SO_4 and then with conc. H_2SO_4. No action was observed in either case. The solid salt contains:

A. Nitrate

B. Sulphide

C. Oxalate

D. Sulphate

Answer: D

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6. When a mixture of solid NaCl, solid $K_2Cr_2O_7$ is heated with conc. H_2SO_4 orange red vapours are obtained. These are of the compound

A. Chromous chloride

B. Chromyl chloride

C. Chromic chloride

D. Chromic sulphate

Answer: B

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7. When Cl_2 water is added to a salt solution containing chloroform, chloroform layer turns violet. Salt contains

A. Cl^-

B. I^-

C. NO_3^-

D. S^{2-}

Answer: B

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8. Chromyl chloride test is performed for the confirmation of the presence of the following in a mixture

A. Sulphate

B. Chromium

C. Chloride

D. Chromium and chloride

Answer: C

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9. Which is soluble in NH_4OH ?

A. $PbCl_2$

B. $PbSO_4$

C. $AgCl$

D. $CaCO_3$

Answer: C

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10. The no.of hydroxyl ions produced by one molecule of Na_2CO_3 on hydrolysis is

A. 2

B. 1

C. 3

D. 4

Answer: A

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11. Nitrates of all metals are

A. Coloured

B. Unstable

C. Soluble in water

D. Insoluble in water

Answer: C

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12. Ammonia reacts with excess of chlorine to form

A. N_2 and HCl

B. NH_4Cl and NCl_3

C. NCl_3 and HCl

D. N_2 and NH_4Cl

Answer: C

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13. Gas A is bubbled through slaked lime when a white precipitate is formed. On prolonged bubbling the precipitate is dissolved. On heating the resultant solution, the white precipitate appears with evolution of gas B. The gases A and B respectively are

A. CO_2 and CO

B. CO and CO_2

C. CO and CO

D. CO_2 and CO_2

Answer: D

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14. To an inorganic mixture dil. H_2SO_4 is added in cold, Colourless , odourless gas is evolved. The mixture contains.

A. Sulphite

B. Acetate

C. Nitrite

D. Carbonate

Answer: D

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15. In the chromyl chloride test the reagent used is

A. K_2CrO_4

B. CrO_3

C. $K_2Cr_2O_7$

D. $(NH_4)_2Cr_2O_7$

Answer: C

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16. The gas which is absorbed by ferrous sulphate solution giviing blackish brown colour is

A. NO

B. CO

C. N_2

D. NH_2

Answer: A

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17. Which of the following will not produce a precipitate with $AgNO_3$ solution

A. F^-

B. Br^-

C. CO_3^{2-}

D. PO_4^{3-}

Answer: A

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18. Which of the following precipitates does not dissolve even in large exceeds of NH_4OH?

A. AgCl

B. AgBr

C. AgI

D. None of these

Answer: C

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19. By passing H_2S gas in acidified $KMnO_4$ solution, we get

A. K_2S

B. S

C. K_2SO_3

D. MnO_2

Answer: B

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20. A white sodium salt dissolves readily 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 dil. HNO_3. The anion could be :

A. SO_4^{2-}

B. CO_3^{2-}

C. S^{2-}

D. Cl^-

Answer: D

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21. Which reagent is used to remove SO_4^{2-} or Cl^- from water ?

A. $BaSO_4$

B. $NaOH$

C. $Pb(NO_3)_2$

D. KOH

Answer: C

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22. Which off the following doesn't give a ppt. with silver nitrate solution

A. Ethyl bromide

B. Sodium bromide

C. Calcium chloride

D. Sodium chloride

Answer: A

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23. The brown ring test for nitrates depends on

A. The reduction of nitrate to nitric oxide

B. Oxidation of nitric oxide to nitrogen dioxide

C. Reduction of ferrous sulphate to iron

D. Oxidising action of sulphuric acid

Answer: A

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24. Ozone when reacts with potassium iodide solution liberates certain product, which turns starch paper blue. The liberated substance is . . . . . .

A. Oxygen

B. Iodine

C. Hydrogen ioidide

D. Potassium hydroxide

Answer: B

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25. Na_2CO_3 cannot be used to identify

A. CO_3^{2-}

B. SO_3^{2-}

C. S^{2-}

D. SO_4^{2-}

Answer: A

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26. Assertion: Lime water becomes trubid on passing CO_2 but becomes clear on passing more CO_2.

Reason: Lime water is calcium hydroxide, $Ca(OH)_2$.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. if both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: B

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Ordinary Thinking Objective Questions Wet Test For Basic Radical

1. Ferric ion forms a prussian blue coloured ppt. due to

A. $K_4Fe(CN)_6$

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

C. $KMnO_4$

D. $Fe(OH)_3$

Answer: B

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2. When H_2S gas is passed into a certain solution, it reacts to form a white precipitate. The solution referred to contains ions of

A. Lead

B. Zinc

C. Copper

D. Nickel

Answer: B

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3. 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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4. 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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5. Sodium carbonate cannot be used in place of ammonium carbonate for the precipitation of the fifth group radicals because

A. Sodium ions interfere with the detection of fifth group radicals

B. Concentrations of carbonate ions is very low

C. Sodium will react with acidic radicals

D. Magnesium will be precipitated

Answer: D

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6. Sometimes yellow turbidity appears while passing H_2S gas even in the absence of II group radicals. This is because of

A. Sulphur is present in the mixture as an impurity

B. The fourth group radicals are precipitated as sulphides

C. The H_2S is oxidized by some acid radicals

D. The third group radicals are precipitated

Answer: C

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

A. KF

B. KCl

C. Kl

D. KOH

Answer: C

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8. Nessler's reagent is used to detect

A. CrO_4^{2-}

B. PO_4^{3-}

C. MnO_4^-

D. NO_2

Answer: D

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9. Which of the following on reaction with H_2S does not produce metallic sulphide ?

A. $ZnCl_2$

B. $CdCl_2$

C. $COCl_2$

D. $CuCl_2$

Answer: C

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10. With $K_4\left[Fe(CN)_6\right]$, Cu^{2+} ion gives

A. A blue ppt

B. A bluish green ppt

C. A blood red ppt

D. A reddish brown ppt

Answer: D

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11. When H_2S gas is passed thorugh the HCl containing aqueous solution of $CuCl_2$, $HgCl_2$, $BiCl_3$ and $CoCl_2$, it does not precipitated out

A. CuS

B. HgS

C. Bi_2S_3

D. CoS

Answer: D

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12. A light greenish coloured salt was soluble in water ion passing H_2S into the slution a black ppt was obtained which dissolves readily in HCl. The metal on present is

A. Co^{+2}

B. Fe^{2+}

C. Ni^{+2}

D. Mn^{+2}

Answer: B

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13. Which mixture is separated by conc. Aqueous solution of sodium hydroxide:-

A. Al^{3+} and Sn^{2+}

B. Al^{3+} and Fe^{3+}

C. Al^{3+} and Zn^{2+}

D. Zn^{2+} and Pb^{2+}

Answer: B

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14. 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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15. H_2S is passed through as acidified solution of Ag, Cu and Zn. Which forms precipitate

A. Ag

B. Zn

C. Cu

D. None of these

Answer: C

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16. When dilute aqueous solution of $AgNO_3$ (excess) is added to KI solution, positively charged sol of AgI in formed due to adsorption of

A. NO_3^-

B. O_2^-

C. Ag^+

D. K^+

Answer: C

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17. A 0.3 M HCl solution contains the following ions $Hg^{++}, Cd^{++}, Sr^{++}, Fe^{++}$. The addition of H_2S to above solution will precipitate

A. Cd, Cu and Hg

B. Cd, Fe and Sr

C. Hg, Cu and Fe

D. Cu, Sr and Fe

Answer: A

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18. A compound is soluble in water. If ammonia is added, a red precipitate appears which is soluble in dilute HCl. The compound has

A. Aluminium

B. Zinc

C. Iron

D. Cadmium

Answer: C

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19. A precipitate of the following would be obtained when HCl is added to a solution of stannous sulphide (SnS) in yellow ammonium sulphide

A. SnS

B. SnS_2

C. Sn_2S_2

D. $(NH_4)_2SnS_3$

Answer: B

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20. A precipitate of .....would be obtained on adding HCl to a solution of Sb_2S_3 in yellow ammonium sulphide.

A. Sb_2S_3

B. Sb_2S_3

C. SbS

D. SbS_2

Answer: B

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21. When HCl gas is passed through saturated solution of $BaCl_2$, a white ppt. is obtained. This is due to

A. Impurities in $BaCl_2$

B. Impurities in HCl

C. Precipitation of $BaCl_2$

D. Formation of complex

Answer: C

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22. Which of the following sulphides is yellow in colour?

A. Zinc sulphide

B. Cadmium sulphide

C. Nickel sulphide

D. Led sulphide

Answer: B

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23. On passing H_2S black ppt. of II group is obtained. The mixture may not contain

A. Pb^{++}

B. Cd^{++}

C. Hg^{++}

D. Cu^{++}

Answer: B

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24. Of the following sulphides which one is insoluble in dil. Acids but soluble in alkalies

A. PbS

B. CdS

C. FeS

D. Sb_2S_3

Answer: D

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25. haemoglobin is a complex of

A. Fe^{3+}

B. Fe^{2+}

C. Fe^{4+}

D. Cu^{2+}

Answer: B

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26. Identity 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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27. Colour of cobalt chloride solution is:

A. Pink

B. Black

C. Colourless

D. Green

Answer: A

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28. Which of the following compounds is brown coloured?

A. $Fe\left[Fe(CN)_4\right]$

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

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

D. $K_2Fe\left[Fe(CN)_6\right]$

Answer: B

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29. Nesseler's reagent is

A. K_2HgI_4

B. $K_2HgI_4 + KOH$

C. $K_2HgI_2 + KOH$

D. $K_2HgI_4 + Hg$

Answer: B

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30. Sodium nitroprusside when added to an alkaline solution of sulphide ions produces

A. Red colouration

B. Blue colouration

C. Purple colouration

D. Brown colouration

Answer: C

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31. Which of the following metal Fe, Zn, Pb, Ag and Pt do not give a metal nitrate on treatment with concentrated HNO_3?

A. Fe and Zn

B. Fe and Pt

C. Pb, Ag and Pt

D. Fe, Zn and Pt

Answer: B

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32. Which of the following metal in solution forms a precipitate with $NaOH$ which is not soluble in an excess of the base?

A. Fe

B. Sn

C. Pb

D. Zn

Answer: A

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33. $Pb(CH_3COO)_2$ gives . . . Colour with H_2S

A. Orange

B. Red

C. Black

D. White

Answer: C

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34. If Na^+ ion is larger than Mg^{2+} ion and S^{2-} ion is larger than Cl^- ion, which of the following will be least soluble in water?

A. MgS

B. $NaCl$

C. Na_2S

D. $MgCl_2$

Answer: A

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35. H_2S will precipitate the sulphide of all the metals from the solution of chlorides of Cu, Zn and Cd if:

A. The solution is aqueous

B. The solution is acidic

C. The solution is dilute acidic

D. Any of these solution is present

Answer: A

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36. Addition of a solution of oxalate to an aqueous solution of mixture of Ba^{2+}, Sr^{2+} and Ca^{2+} will precipitate

A. Ca^{++}

B. Ca^{++} and Sr^{++}

C. Ba^{++} and Sr^{++}

D. All the three

Answer: D

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37. When bismuth chloride is poured into a large volume of water then white precipitate produced is

A. $Bi(OH)_3$

B. Bi_2O_3

C. $BiOCl$

D. Bi_2OCl_3

Answer: C

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38. AgCl dissolves in ammonia solution giving

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

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

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

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

Answer: D

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39. On addition of aqueous NaOH to a salt solution, a white gelatinous precipitate is formed, which dissolves in excess of alkali. The salt solution contains

A. Chromium ions

B. Aluminium ions

C. Barium ions

D. Iron ions

Answer: B

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40. On passing H_2S gas in II group sometimes the solution turns milky. It indicates the presence of

A. Acidic salt

B. An oxidizing agent

C. Thiosulphate

D. A reducing agent

Answer: B

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41. Mark the correct statement

A. I group basic radicals precipitate as chlorides

B. IV group basic radicals precipitate as sulphides

C. V groups basic radicals precipitate as carbonates

D. All of these statement are correct

Answer: D

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42. In the analysis of basic radicals, the group reagent H_2S gas is generally used in the groups

A. I and II groups

B. II and III groups

C. III and V groups

D. II and IV groups

Answer: D

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43. Four colourless salt solutions are placed in separate test tubes and a strip of copper is dipped in each. Which solution finally turns blue ?

A. $AgNO_3$ solution

B. $Zn(NO_3)_2$ solution

C. $Ba(NO_3)_2$ solution

D. $NaNO_3$ solution

Answer: A

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44. The ion which can be precipitated with both HCl and H_2S separately is

A. Pb^{2+}

B. Fe^{3+}

C. Zn^{2+}

D. Cu^{2+}

Answer: A

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

A. NaCl

B. Sodium acetate

C. Sodium nitrate

D. Sodium hydrogen phosphate

Answer: A

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46. In the analysis of basic radicals, NH_4OH and NH_4Cl give precipitate with

A. I-group radicals

B. II-group radicals

C. III-group radicals

D. IV-group radicals

Answer: C

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47. Flame test is not given by

A. Ba^{2+}

B. Be^{2+}

C. Ca^{2+}

D. Sr^{2+}

Answer: B

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48. In analysis of third contains of mixture analysis, solid NH_4Cl is added prior to NH_4OH for the following

A. Availability of Cl^- ions

B. Availability of NH_4^+ ions

C. Complete dissociation of NH_4OH

D. Controlled dissociation of NH_4OH

Answer: D

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49. Distinguishing reagent between silver and lead salt is

A. H_2S gas

B. Hot dilute HCl solution

C. $NH_4Cl(\text{solid}) + NH_4OH$ solution

D. $NH_4Cl(\text{solid}) + (NH_4)_2CO_3$ solution

Answer: B

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50. The colour of $CuCr_2O_7$ solution in water is green because

A. $Cr_2O_7^{2-}$ ions are green

B. Cu^{++} ions are green

C. Both ions are green

D. Cu^{++} ions are blue and $Cr_2O_7^{2-}$ ions are yellow

Answer: D

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51. When H_2S gas is passed in a metal sulphate solution in presence of NH_4OH, a white precipitate is produced. The metal is identified as

A. Zn

B. Fe

C. Pb

D. Hg

Answer: A

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52. Precipitate of group IV cations takes place when H_2S is

A. Highly ionised

B. Less ionised

C. Not ionised

D. None of these

Answer: D

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53. How do we differentiate between Fe^{3+} and Cr^{3+} in group III ?

A. By taking exess of NH_4OH solution

B. By increasing NH_4^+ ion concentration

C. By decreasing OH^- ion concentration

D. Both (b) and (c)

Answer: D

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54. When H_2S is passed through Hg_2^{2+}, we get

A. HgS

B. $HgS + Hg_2S$

C. $HgS + Hg$

D. Hg_2S

Answer: C

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55. Which of the following sulphate is insoluble in water ?

A. $CuSO_4$

B. $CdSO_4$

C. $PbSO_4$

D. $Bi(SO_4)_3$

Answer: C

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56. A mixture of two salts is not water soluble but dissolves completely in dilute HCI to form a colourless solution. The mixture could be:

A. $AgNO_3$ and KBr

B. $BaCO_3$ and ZnS

C. $FeCl_3$ and $CaCO_3$

D. $Mn(NO_3)_2$ and $MgSO_4$

Answer: B

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57. A chloride dissolves appreciably in cold water. When placed on platinum wire in Bunsen flame, no distinctive colour is noticed, the cation would be

A. Mg^{2+}

B. Ba^{2+}

C. Pb^{2+}

D. Ca^{2+}

Answer: A

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58. Which of the following mixture is chromic acid?

A. $K_2Cr_2O_7$ and HCl

B. K_2SO_4 and conc. H_2SO_4

C. H_2SO_4 and HCl

D. $K_2Cr_2O_7$ and conc. H_2SO_4

Answer: D

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59. Which radicals are precipitated in $(NH_4)_2CO_3$ in presence of alkali

A. Ca, Ba, Sr

B. Mg

C. Both

D. None of these

Answer: A

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60. Which of the following pairs of ions when mixed in dilute solutions may be precipitate

A. Na^+, SO_4^{2-}

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

C. Na^+, S^{2-}

D. Fe^{3+}, PO_4^{3-}

Answer: D

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61. A colourless crystalline salt 'X' is soluble in dilute HCl. On adding NaOH solution, it gives a white precipitate which is insoluble in excess of NaoH. 'X' is

A. $AL_2(SO_4)_3$

B. $ZnSO_4$

C. $MgSO_4$

D. $SnCl_2$

Answer: C

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62. In which of the following, NH_3 is not used

A. Nessler's reagent

B. Group reagent for the analysis of IV group basic radical

C. Group reagent for the analysis of III group basic radical

D. Tollen's reagent

Answer: A

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63. A solid (A) which has photographic effect reacts with the solution of a sodium salt (B) to give a pale yellow ppt. (C). Sodium salt on heating gives brown vapour. Identify A, B and C

A. $AgNO_3, NaBr, AgBr$

B. $AgNO_3, NaCl, AgCl_2$

C. $AgNO_3, NaBr, AgCl_2$

D. $AgCl, NaBr, AgBr_2$

Answer: A

Watch Video Solution

64. Out of $Cu^{2+}, Ni^{2+}, Co^{2+}$ and Mn^{2+} those dissolved in dil. HCL only one gives a precipitate when H_2S is passed. Identify the corresponding one.

A. Ni^{2+}

B. Cu^{2+}

C. Co^{2+}

D. Mn^{2+}

Answer: B

Watch Video Solution

65. When calomel react with NH_4OH solution the compound formed is

A. $NH_2 - Hg - Cl$

B. $Hg_2Cl_2NH_3$

C. $Hg(CH_3)_2Cl_2$

D. $HgCl_2NH_3$

Answer: A

Watch Video Solution

66. Addition of $SnCl_2$ to $HgCl_2$ gives precipitate:

A. White turning to red

B. White turning to grey

C. Black turning to white

D. None of these

Answer: B

Watch Video Solution

67. When acetic acid and $K_4Fe(CN)_6$ is

added to a copper salt, a chocolate precipitate

is obtained of the compound

A. Copper cyanide

B. Copper ferrocyanide

C. Basic copper sulphate

D. Basic copper cyanide

Answer: B

Watch Video Solution

68. Assertion:Sb(III) is not precipitated as sulphide when in its alkaline solution H_2S is passed.

Reason:The concetration of S^2 ion in alkaline medium is inadequate for precipitation

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. if both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: C

Watch Video Solution

69. Addition of NH_4OH to an aqueous solution of $BaCl_2$ in the presence of NH_4Cl (excess) precipitates $Ba(OH)_2$.

$Ba(OH)_2$ is insoluble in water.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. if both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: D

Watch Video Solution

70. Cu^{2+} and Cd^{2+} are separated by first adding KCN solution and then passing H_2S gas.

KCN reduces Cu^{2+} to Cu^{+} and forms a complex with it.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. if both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: B

Watch Video Solution

71. White ppt. of AgCl is soluble in NH_4OH

It is due to the formation of soluble complex.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. if both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: A

Watch Video Solution

Ordinary Thinking Objective Questions Volumetric Analysis

1. Which indicator can be used in the titration of strong acid and strong base

A. Only phenoplphthalein

B. Only methyl orange

C. Eitehr of the two

D. Red litmus

Answer: C

Watch Video Solution

2. If we use phenolphthalein as an indicator in a titration of Na_2CO_3 with HCl, the usual result is

A. No visible change is occur

B. The indicator reacts with the acid

C. The indicator reacts with the base

D. Sodium chloride and carbonic acid will be formed

Answer: A

Watch Video Solution

3. When $KMnO_4$ solution is titrated with a solution containing Fe^{2+} ion, the indicator used in this titration is

A. Phenolphthalein

B. Methyl orange

C. $K_3[Fe(CN)_6]$

D. None of these

Answer: D

Watch Video Solution

4. Which of the following cannot give iodometric titrations?

A. Fe^{3+}

B. Cu^{2+}

C. Pb^{2+}

D. Ag^{2+}

Answer: C

Watch Video Solution

5. The maximum amount of $BaSO_4$ precipitated on mixing $BaCl_2$ (0.5 M) with H_2SO_4 (1M) will correspond to

A. 0.5 M

B. 1.0 M

C. 1.5 M

D. 2.0 M

Answer: A

Watch Video Solution

6. 0.45 g an acid (mol wt.=90) required 20 ml of 0.5 N KOH for complete neutralization. Basicity of acid is

A. 1

B. 2

C. 3

D. 4

Answer: B

Watch Video Solution

7. What is the concentration of nitrate ions if equal volumes of $0.1MAgNO_3$ and $0.1MNaCl$ are mixed together?

A. 0.1 N

B. 0.2 M

C. 0.05 M

D. 0.25 M

Answer: C

Watch Video Solution

8. A 0.1 N solution of Na_2CO_3 is titrated with 0.1 N HCl solution. The best indicator to be used is

A. Potassium ferricyanide

B. Phenolphthalein

C. Methyl red

D. Litmus Paper

Answer: C

Watch Video Solution

9. The range of methyl orange as an indicator is in between pH

A. $6 - 8$

B. $8 - 9$

C. $3 - 5$

D. $2 - 4$

Answer: C

Watch Video Solution

10. 15 ml of 0.2 N alkali is required to complete neutralization of 30 ml acid solution. Concentration of the acid solution is

A. 0.1 N

B. 0.3 N

C. 0.15 N

D. 0.4 N

Answer: A

Watch Video Solution

11. Volume of $0.1MH_2SO_4$ required to neutralize 30 mL of $0.2NNaOH$ is

A. 30 ml

B. 15 ml

C. 40 ml

D. 60 ml

Answer: A

Watch Video Solution

12. 0.16 g of dibasic acid required 25 ml of decinormal NaOH solution for complete neutralisation. The molecular weight of the acid will be

A. 32

B. 64

C. 128

D. 256

Answer: C

Watch Video Solution

13. The pink colour of phenolphthalein in alkaline medium is due to

A. Due to negative ion

B. Due to positive form

C. Due to OH^- ions

D. Due to neutral form

Answer: A

Watch Video Solution

14. A solution containing Na_2CO_3 and $NaOH$ requires $300ml$ of $0.1NHCl$ using phenolphthalein as an indicator. Methyl orange is then added to the above titrated solution when a further $25ml$ of $0.2NHCl$ is required. The amount of $NaOH$ present in solution is $(NaOH = 40, Na_2CO_3 = 106)$

A. 0.5 g

B. 1 g

C. 2 g

D. 4 g

Answer: B

Watch Video Solution

15. $2NHCI$ solution will have the same molar concentration as a

A. $0.5N - H_2SO_4$

B. $1.0N - H_2SO_4$

C. $2N - H_2SO_4$

D. $4N - H_2SO_4$

Answer: D

Watch Video Solution

16. The volume of 0.1 M H_2SO_4 that is needed to completely neutralise 40 ml of 0.2 M NaOH is

A. 10 ml

B. 20 ml

C. 40 ml

D. 80 ml

Answer: C

Watch Video Solution

17. If 30 ml of H_2 and 20 ml of O_2 react to form water, what is left at the end of the reaction ?

A. 10 ml of H_2

B. 5 ml of H_2

C. 10 ml of O_2

D. 5 ml of O_2

Answer: D

Watch Video Solution

18. The volume of $\frac{N}{10}NaOH$ require to neutralise 100 ml of $\frac{N}{25}$ HCl is

A. 30 ml

B. 100 ml

C. 40 ml

D. 25 ml

Answer: C

Watch Video Solution

19. Volume of 0.6 M NaOH required to neutralise $30cm^3$ of $0.4M$ HCl is

A. $40cm^3$

B. $30cm^3$

C. $20cm^3$

D. $10cm^3$

Answer: C

Watch Video Solution

20. When a standard solution of NaOH is left in air for a few hours:

A. A precipitate will form

B. Stregnth will decrease

C. The concentration of Na^+ ions will decreases

D. All are wrong

Answer: B

Watch Video Solution

21. When 100 ml 1N-NaOH solution and 10 ml of 10 N sulphuric acid solution are mixed together, the resulting solution will be

A. Alkali

B. Weakly acidic

C. Strongly acidic

D. Neutral

Answer: D

Watch Video Solution

22. For preparing 0.1 M solution of H_2SO_4 in one litre, we need H_2SO_4

A. 9.8 gms

B. 10 gms

C. 100 gms

D. 4.9 gms

Answer: A

Watch Video Solution

23. 200 ml 0.6 N H_2SO_4 and 100 ml of 0.3 N HCl are mixed together. Acidic normality of the resultant solution is

A. 0.5 N

B. 0.9 N

C. 0.3 N

D. 0.6 N

Answer: A

Watch Video Solution

24. What is the volume of 0.1 N-HCl required to react completely with 1.0 gm of pure calcium carbonate

A. $100cm^3$

B. $150cm^3$

C. $250cm^3$

D. $200cm^3$

Answer: D

Watch Video Solution

25. Concentrated HCl is $10N, 1000cc$ of 1N HCl can be obtained by diluting

A. 1 cc of conc. HCl to 1000 cc

B. 10 cc of conc. HCl to 1000 cc

C. 20 cc of conc. HCl to 1000 cc

D. 100 cc of conc. HCl to 1000 cc

Answer: D

Watch Video Solution

26. To change the strength of 25 ml of 0.15 M HCl to 0.1 M the quantity of water that is to be added is

A. 37.5 ml

B. 12.5 ml

C. 25.0 ml

D. 18.75 ml

Answer: B

Watch Video Solution

27. For the preparation of sodium thiouslphyate by "Spring's reaction', the reactants used are

A. $Na_2S + Na_2SO_3 + Cl_2$

B. $Na_2S + SO_2$

C. $Na_2SO_3 + S$

D. $Na_2S + Na_2SO_3 + I_2$

Answer: D

Watch Video Solution

28. In acidic medium, dichromate ion oxidizes ferrous ion to ferric ion. If the gram molecular weight of potassium dichromate is $294g$, is gram equivalent weight is _____g.

A. 294

B. 127

C. 49

D. 24.5

Answer: C

Watch Video Solution

29. Required amount of crystalline oxalic acid (eq. wt. = 63) to prepare $\frac{N}{10}$, 250 ml oxalic acid solution is

A. 0.158 g

B. 1.575 g

C. 15.75 g

D. 6.3 g

Answer: B

Watch Video Solution

30. 0.53 gm of Na_2CO_3 has been dissolved in 100 ml of a sodium carbonate solution. The normality of the solution will be

A. $\frac{N}{5}$

B. $\frac{N}{2}$

C. $\frac{N}{10}$

D. N

Answer: C

Watch Video Solution

31. A 100 ml solution of 0.1N-HCl was titrated with 0.2 N-NaOH solution. The titration was discontinued after adding 30 ml of NaOH solution. The remaining titration was completed by adding 0.25N-KOH solution. The volume of KOH required for completing the titration is

A. 16 ml

B. 32 ml

C. 35 ml

D. 70 ml

Answer: A

Watch Video Solution

32. $50mL$ of $10NH_2SO_4$, $25mL$ of $12NHCI$ and $40mL$ of $5NHNO_3$ are mixed and the volume of the mixture is made 1000 mL by adding

water. The normality of resulting solution will be

A. 1N

B. 2N

C. 3N

D. 4N

Answer: A

Watch Video Solution

33. Phenolphthalein is most suitable indicator for the titration of

A. CH_3COOH and NH_4OH

B. CH_3COOH and $NaOH$

C. HCl and NH_4OH

D. H_2CO_3 and NH_4OH

Answer: B

Watch Video Solution

34. A metal oxide is reduced by heating it in a stream of hydrogen. It is found that after complete reduction, 3.15g of the oxide have yielded 1.05 g of the metal. We may deduce that

A. The eq. weight of the metal is 8.

B. The atomic weight of the metal is 8

C. The atomic weight of the metal is 4

D. The eq. weight of the metal is 4

Answer: D

Watch Video Solution

35. The molecular weight of a tribasic acid is M. What will be its equivalent weight

A. $\frac{M}{2}$

B. M

C. $\frac{M}{3}$

D. $\sqrt{\frac{M}{3}}$

Answer: C

Watch Video Solution

36. Phenolphthalein is not suitable for the titration of

A. $NaOH$ vs $(COOH)_2$

B. KOH vs H_2SO_4

C. K_2CO_3 vs HCl

D. None of these

Answer: D

Watch Video Solution

37. What will be the volume of CO_2 at S.T.P., obtained by heating 9.85g of $BaCO_3$ (atomic number of Ba=137)

A. 1.12 litre

B. 0.84 litre

C. 2.24 litre

D. 4.06 litre

Answer: A

Watch Video Solution

38. The strength of a solution (S) in gram/litre, is related to its normality (N) and equivalent weight of solute (E) by the formula

A. $S = \frac{N}{E}$

B. $S = \frac{E}{N}$

C. $S = N.E.$

D. All of these

Answer: C

Watch Video Solution

39. 15 ml of N/10 NaOH solution completely neutralises 12 ml of H_2SO_4 solution. The normality of H_2SO_4 solution will be

A. $N/5$

B. $N/10$

C. $N/8$

D. N

Answer: C

Watch Video Solution

40. 100 cm^3 of 0.1 N HCl is mixed with 100 cm^3 of 0.2 N NaOH solution. The resulting solution is

A. 0.1 N and the solution is basic

B. 0.05 N and the solution is basic

C. 0.1 N and the solution is acidic

D. 0.05 N ad the solution is acidic

Answer: B

Watch Video Solution

41. For preparing 0.1 N solution of a compound from its impure sample, of which the percentage purity is known, the weight of the substance required will be

A. More than the theoretical weight

B. Less than the theoretical weight

C. Same as theoretical weight

D. None of these

Answer: A

Watch Video Solution

42. 0.1914 g of an organic acidi s dissolved in about 20 ml of water. 25 ml of 0.12 N NaOH is required for the complete neutralizatioonf the acid solution. The equivalent weight of the acid is

A. 65

B. 64

C. 63.8

D. 62.5

Answer: C

Watch Video Solution

43. 0.126 g of acid required 20 mL of 0.1 N NaOH for complete neutralisation. The equivalent mass of an acid is

A. 45

B. 53

C. 40

D. 63

Answer: D

Watch Video Solution

44. The ratio of amounts of H_2S needed to precipitate all the metal ions from $100ml$ of $1MAgNO_3$ and $100ml$ of $1MCuSO_4$ will be

A. $1:2$

B. $2:1$

C. Zero

D. Infinity

Answer: A

Watch Video Solution

45. In order to prepare one litre normal solution of $KMnO_4$, how many grams of $KMnO_4$ are required if the solution is used in acidic medium for oxidation

A. 158 gm

B. 31.60 gm

C. 62.0 gm

D. 790 gm

Answer: B

Watch Video Solution

46. 20 ml of a solution of a weak monobasic acid neutralizes 22.18 ml of solution of NaOH and 20 ml of N/10 HCl neutralizes 21.5 ml of the same NaoH solution. The normality for the acid is nearly

A. 10 N

B. 1 N

C. 0.10 N

D. 100 N

Answer: C

Watch Video Solution

47. 100 ml of an acid solution is neutralized by 50 ml of NaOH solution containing 0.2 g NaOH. The concentration of acid solution is

A. 0.1 N

B. 0.05 N and the solution is basic

C. 0.5 N

D. 0.25 N

Answer: A

Watch Video Solution

48. Amount of oxalic acid present in a solution can be determined by its titration with $KMnO_4$ solution in the presence of H_2SO_4. The titration gives unsatisfactory result when carried out in the presence of HCl, because HCl

A. Furnishes H^+ ions in addition to those from oxalic acid

B. Reduces permanganate to Mn^{2+}

C. Oxidises oxalic acid to carbon dioxide and water

D. Get oxidised by oxalic acid to chlorine

Answer: B

Watch Video Solution

49. In the reaction,

$I_2 + 2S_2O_3^{2-} \rightarrow 2I^- + S_4O_6^{2-}$.

Equivalent wieght of iodine will be equal to

A. Molecular weight

B. 1/2 the molecular weight

C. 1/4 the molecular weight

D. Twice the moelcular weight

Answer: B

Watch Video Solution

50. The weight of a residue obtained by heating 2.76 g of silver carbonate is

A. 2.76 g

B. 2.98 g

C. 2.16 g

D. 2.44 g

Answer: C

Watch Video Solution

51. The equivalent weight of $Zn(OH)_2$ is the following reaction is equal to its, $\left[Zn(OH)_2 \rightarrow (NO_3) \rightarrow Zn(OH)(NO_3) + H_2O\right]$

A. $\frac{\text{Formula wt.}}{2}$

B. $\frac{\text{Formula wt.}}{1}$

C. $3 \times$ formula

D. $2 \times$ formula

Answer: B

Watch Video Solution

52. The equivalent weight of divalent metal is 31.82. The weight of a single atom is

A. 63.64

B. $\frac{63.64}{6.02 \times 10^{23}}$

C. $32.77 \times 6.02 \times 10^{23}$

D. $63.64 \times 6.02 \times 10^{23}$

Answer: B

Watch Video Solution

53. The equivalent mass of potassium permanganate in alkaline medium is

A. $\frac{\text{Molar mass}}{5}$

B. $\frac{\text{Molar mass}}{3}$

C. $\frac{\text{Molar mass}}{2}$

D. Molar mass itself

Answer: B

Watch Video Solution

54. The volume of 0.1M $Ca(OH)_2$ required to neutralize 10 mL of 0.1 N HCl

A. 10 mL

B. 20 mL

C. 5 mL

D. 15 mL

Answer: C

Watch Video Solution

55. What is the molarity of H_2SO_4 solution if 25 ml of exactly neutralised with 32.63 ml of 0.164M, NaoH

A. 0.107 M

B. 0.126 M

C. 0.214 M

D. $-0.428M$

Answer: A

Watch Video Solution

56. If 20 ml of 0.25N strong acid and 30 ml of 0.2 N of strong base are mixed, then the resulting solution is

A. 0.25 N basic

B. 0.2 N acidic

C. 0.25 N acidic

D. 0.2 N basic

Answer: D

Watch Video Solution

57. 100 mL of 0.1 M acetic acid is completely neutralized using a standard solution of NaOH. The volume of ethane obtained at STP after the complete electrolysis of the resulting solution is

A. 112 mL

B. 56 mL

C. 224 mL

D. 560 mL

Answer: A

Watch Video Solution

Watch Video Solution

58. The formula mass of Mohr's salt is 392. The iron present in it is oxidised by $KMnO_4$ in acid medium. The equivalent mass of Mohr's salt is :

A. 392

B. 31.6

C. 278

D. 156

Answer: A

Watch Video Solution

59. Express of CO_2 is passed through 50 mL of 0.5 M calcium hydroxide solution. After the completion of the reaction, the solution was evaporated to dryness. The solid calcium carbonated was

completely neutralized with 0.1 N hydrochloric acid. The volume of hydrochloric acid required is (At mass of carbon = 40)

A. $200ml$

B. $500ml$

C. $400ml$

D. $300ml$

Answer: B

Watch Video Solution

60. An aqueous solution containing 6.5 g of NaCl of 90% purity was subjected to electrolysis. After the complete electrolysis, the solution was evaporated to get solid NaOH. The volume of 1 M acetic acid required to neutralise NaOH obtained above is

A. $2000cm^3$

B. $100cm^3$

C. $200cm^3$

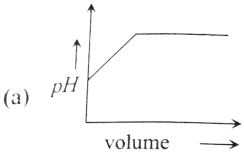
D. $1000cm^3$

Answer: B

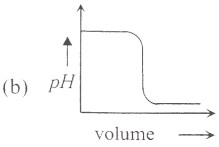
Watch Video Solution

61. Which of the following plot represents the graph of pH against volume of alkali added in the titration of NaOH and HCl

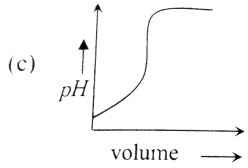
A.



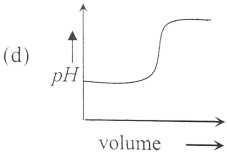
B.



C.



D.



Answer: C

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62. In the iodometric estimation in the laboratory which process is involved?

A.

$$Cr_2O_7^{2-} + H^+ + I^- \rightarrow 2Cr^3 + I_2, I_2 + S_2O_3^{2-} \rightarrow S_4O_6^{2-} + I^-$$

B. $MnO_4^- + H^+ + I^- \rightarrow MnO_2 + I_2$

$$I_2 + S_2O_3^{2-} \rightarrow S_4O_6^{2-} + I^-$$

C. $MnO_4^- + OH^- + I^- \rightarrow MnO_2 + I_2$

$I_2 + S_2O_3^{2-} \rightarrow S_4O_6^{2-} + I^-$

D. $Cr_2O_7^{2-} + OH^- + I^- \rightarrow 2Cr^{3+} + I_2$

$I_2 + S_2O_3^{2-} \rightarrow S_4O_6^{2-} + I^-$

Answer: B

Watch Video Solution

63. Which is the best choice for weak base-strong acid titration ?

A. methyl red

B. Litmus

C. Phonol red

D. Phenolphthalein

Answer: A

Watch Video Solution

64. What volume at N.T.P. of gaseous NH_3 will be required to be passed into 30 ml of $N - H_2SO_4$ solution to bring down the acid strength of this solution to 0.2 N

A. 357.2 ml

B. 444.4 ml

C. 537.6 ml

D. 495.6 ml

Answer: C

Watch Video Solution

65. 25 ml of a solution of Na_2CO_3 having a specific gravity of 1.25 required 32.9 ml of a solution of HCl containing 109.5 grams of the

acid per litre for complete neutralization. Calculate the volume of 0.84N-H_2SO_4 that will be completely neutralized by 125 grams of the Na_2CO_3 solution

A. 460 ml

B. 540 ml

C. 480 ml

D. 470 ml

Answer: D

Watch Video Solution

66. Metallic tin in the presence of HCl is oxidised by $K_2Cr_2O_7$ to stannic chloride. What volume of decinormal dichromate solution would be reduced by 1 g of tin

A. 168.9 ml

B. 175.49 ml

C. 170.50 ml

D. 162.38 ml

Answer: A

View Text Solution

67. In 1 gram of ametal oxide, metal precipitated is 0.68 gm. What is the equivalent weight of metal

A. 17

B. 34

C. 68

D. 52

Answer: A

Watch Video Solution

68. 20 ml of 1 N solution of $KMnO_4$ just reacts with 20 ml of a solution of oxalic acid. The weight of oxalic acid crystals in 1N of the solution is

A. 31.5 g

B. 126 g

C. 63 g

D. 6.3 g

Answer: C

Watch Video Solution

69. What will be the volume of 12 M solutions, if it is equivalent to 240 mL of 18 M solution?

A. 6 litre

B. 600 litre

C. 400 litre

D. 0.36 litre

Answer: D

Watch Video Solution

70. Weight of $Ca(OH)_2$ needed to prepare 250 ml of solution with pH=13

A. 0.925 g

B. 0.0125 g

C. 0.25 g

D. 1 g

Answer: A

Watch Video Solution

71. How many grams of NaOH are equivalent to 100 ml of 0.1 N oxalic acid

A. 0.2

B. 2

C. 0.4

D. 4

Answer: C

Watch Video Solution

72. Assertion: $K_2Cr_2O_7$ is used as primary standard in volumetric analysis.

Reason: It has a good solubility in water.

A. If both assertion and reason are true and the reason is the correct explanation of the assertion.

B. if both assertion and reason are true but reason is not the correct explanation of the assertion.

C. If assertion is true but reason is false.

D. If the assertion and reason both are false.

Answer: C

Watch Video Solution

Critical Thinking Objective Questions

1. Which one of the following statement is not true

A. Clean water would have a BOD value of 5 ppm.

B. Fluoride deficiency in drinking water is harmful. Soluble fluoride is often used to bring its concentration upto 1 ppm

C. When pH of rain water is higher than 6.5, it is called acid rain

D. Dissolved Oxygen (DO) in cold water can reach a concentration upto 10 ppm

Answer: D

Watch Video Solution

2. 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

Watch Video Solution

3. 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

Watch Video Solution

4. Which of the following compound on reaction with NaOH and Na_2O_2 gives yellow colour?

A. $Zn(OH)_2$

B. $Al(OH)_3$

C. $Cr(OH)_3$

D. $CaCO_3$

Answer: C

Watch Video Solution

5. To an acidic solution of an anion, a few drops of $Kmno_4$ solution are added. Which of the following, if present, will not decolourise the $KMnO_4$ solution?

A. NO_2^-

B. S^{2-}

C. Cl^-

D. CO_3^{2-}

Answer: D

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6. A white solid Y, on heating gives off a gas which turns lime water milky, the residue is yellow when hot, white when cold. The solid Y is probably:

A. Zinc sulphide

B. Zinc carbonate

C. Lead sulphate

D. Lead carbonate

Answer: B

Watch Video Solution

7. On performing a borax-bead test with a given inorganic mixture for qualitative analysis, the colour of the bead was found to emerald green both in oxidising and reducing flame. It indicates the possibility of the presence of

A. Co^{+2}

B. Ni^{+2}

C. Cr^{+3}

D. Cu^{+2}

Answer: C

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8. Out of the following the one which is not a primary standard is

A. $K_2Cr_2O_7$

B. $KMnO_4$

C. Oxalic acid

D. Ceric sulphate

Answer: B

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9. If NaOH is added to an aqueous solution of Zn^{2+} ions a white precipitate apperars and on adding excess of NaOH, the precipitate dissolves. In this solution Zinc exists in____

A. Cationic part

B. Anionic part

C. Both in cationic and anionic parts

D. There is not zinc in the solution

Answer: B

Watch Video Solution

10. A salt on treatment with dil. HCl gives a pungent smelling gas and a yellow precipitate. The salt gives green flame when tested. The

solution gives a yellow ppt. with potassium chromate. The salt is

A. $NiSO_4$

B. BaS_2O_3

C. PbS_2O_3

D. $CuSO_4$

Answer: B

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11. To a 25 ml H_2O_2 solution, excess of acidified solution of Kl was added. The iodine liberated required 20 ml of 0.3 N $Na_2S_2O_3$ solution. The volme strength of H_2O_2 solution is

A. 1.34 ml

B. 1.44 ml

C. 4.08 ml

D. 2.42 ml

Answer: C

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12. 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 rod solid is:

A. $(NH_4)_2Cr_2O_7$

B. HgI_2

C. HgO

D. Pb_3O_4

Answer: B

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13. 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 dil. NaCl solution and one formed a black precipitate with H_2S. The salt could

A. $AgNO_3$ solution

B. $Pg(NO_3)_2$

C. $Hg(NO_3)_2$

D. $MnSO_4$

Answer: B

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14. H_3PO_4 is a tribasic acid and one of its salts of NaH_2PO_4. What volume of 1 M NaOH should be added to 12 g NaH_2PO_4 (molecular

mass = 120 g/mole) to exactly convert it into Na_3PO_4

A. 80 ml

B. 100 ml

C. 200 ml

D. 300 ml

Answer: C

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15. A white crystalline salt [A] reacts with dilute HCl to liberate a suffocating gas [B] and also forms a yellow precipitate. The gas [B] turns potassium dichromate acidified with dilute H_2SO_4 to a green coloured solution [C]. A,B ad C are respectively.

A. Na_2SO_3, SO_2, $Cr_2(SO_4)_3$

B. $Na_2S_3O_3$, SO_2, $Cr_2(SO_4)_3$

C. Na_2S, SO_2, $Cr_2(SO_4)_3$

D. Na_2SO_4, SO_2, $Cr_2(SO_4)_3$

Answer: B

Watch Video Solution

16. Salt used for performing bead test in qualitative inorganic analysis is

A. $K_2SO_4.\ Al_2(SO_4)_3.24H_2O$

B. $FeSO_4.\ (NH_4)_2SO_4.6H_2O$

C. $Na(NH_4)HPO.4H_2O$

D. $CaSO_42H_2O$

Answer: C

Watch Video Solution

17. The best explanation for the solubility of MnS in dil. HCI is that:

A. Solubility product of $MnCl_2$ is less than that of MnS

B. Concentration of Mn^{2+} is lowered by the formation of complex ions with chloride ions

C. Concentration of sulphide ions is lowered by oxidation to free sulphur

D. Concentration of sulphide ions is lowered by formation of the weak acid H_2S

Answer: D

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18. A chemistry student trying to detect the metallic ion in a salt, makes a paste on a clean platinum wire loop of the salt with

concentrated HCl. When he takes a small amount of this paste and keeps it in a non-luminous Bunsen flame, the colour of the flame changes to grassy green.He should, therefore, conclude that the metal is

A. Barium

B. Calsium

C. Potassium

D. Strontium

Answer: A

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19. Mixture is heated with dil. H_2SO_4 and the lead acetate paper turns black by the evolved gases. The mixture contains

A. Sulphite

B. Sulphide

C. Sulphate

D. Thiosulphate

Answer: B

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20. 10 ml of concentrated HCl were diluted to 1 litre. 20 ml of this diluted solution required 25 ml of 0.1 N sodium hydroxide solution for complete neutralization, the normality of the concentrated acid will be

A. 8

B. 9.5

C. 12.5

D. 15

Answer: C

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Jee Section Only One Choice Answer

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

A. Cupric chloride

B. Cadmium chloride

C. Zinc chloride

D. Sodium chloride

Answer: A

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2. The ion that cannot be precipitated by both HCl and H_2S is

A. Pb^{2+}

B. Cu^{+}

C. Ag^{+}

D. Sn^{2+}

Answer: D

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3. 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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4. When conc. H_2SO_4 is added to dry KNO_3 brown fumes evolve. These fumes are of

A. SO_2

B. SO_3

C. NO

D. NO_2

Answer: D

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

A. Ferro-ferricyanide

B. Ferri-ferrocyanide

C. Ferri-ferricyanide

D. None of these

Answer: A

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6. The aqueous solution of the following salts will be coloured in the case of

A. $Zn(NO_3)_2$

B. $LiNO_3$

C. $CrCl_3$

D. Potash alum

Answer: C

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7. 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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8. 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. SO_3^{2-}

B. S^{2-}

C. Mg^{2+}

D. NO_2^-

Answer: C

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9. An aqueous solution containing Hg^{2+}, Hg_2^{2+}, Pb^{2+} and Cd^{2+} ions will give precipitate of _ _ _ with dil. HCl

A. Hg_2Cl_2 only

B. $PbCl_2$ only

C. $PbCl_2$ and Mg_2Cl_2

D. $PbCl_2$ and $HgCl_2$

Answer: C

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10. Sodium nitroprusside, when added to an alkaline solution of sulphide ions, produces purple colour ion due to the formation off

A. $Na\left[Fe(H_2O)_5NOS\right]$

B. $Na_2[H_2O)_5NOS]$

C. $Na_3\left[Fe(CN)_5NOS\right]$

D. $Na_4\left[Fe(CN)_5NOS\right]$

Answer: D

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11. Which one of the following anions is not easily removed from aqueous solutions by precipitation

A. Cl^-

B. NO_3^-

C. CO_3^{-2}

D. SO_4^{-2}

Answer: B

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12. Which compound does not dissolve in hot dilute HNO_3 ?

A. HgS

B. PbS

C. CuS

D. CdS

Answer: A

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13. An aqueous solution of $FeSO_4 \cdot Al_2(SO_4)_3$ and chromium alum is heated with excess of Na_2O_2 and filtered. The material obtained are:

A. A colourless filtrate and a green residue

B. A yellow filtrate and a green residue

C. A yellow filtrate and a brown residue

D. A green filtrate and a brown residue

Answer: C

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14. The only cations present in the slightly acidic solution are Fe^{3+}, Zn^{2+} and Cu^{2+}. The reagent that when added in exess to this solution would identify and separate Fe^{3+} in one step is:

A. 2M HCl

B. 6M NH_3

C. 6 NaOH

D. H_2S gas

Answer: B

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15. In the standardization of $Na_2S_2O_3$ using $K_2Cr_2O_7$ by iodometry, th equivalent weight of K_2Cr_2O is

A. (molecular weight)/2

B. (molecular weight)/6

C. (molecular weight)/3

D. Same as molecular weight

Answer: B

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16. Identify the correct order of solubility of Na_2S, CuS and ZnS in aqueous solution

A. CuSgtZnSgtNa_2S

B. $ZnS > Na_2S > CuS$

C. $Na_2S > CuS > ZnS$

D. $Na_2S > ZnS > CuS$

Answer: D

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17. An aqueous solution of a substance gives a white precipitate on treatment with dilute hydrochloric acid, which dissolves on heating. When hydrogen sulphide is passed through the hot acidic solution, a black precipitate is obtained. The substance is a

A. Hg_2^{2+} salt

B. Cu^{2+} salt

C. Ag^{+} salt

D. Pb^{2+} salt

Answer: D

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18. A gas X is passed through water to form a saturated solution. The aqueous solution on treatment with silver nitrate gives a white

precipitate. The saturated aqueous solution also dissolves magnesium ribbon with evolution of a colourless gas Y. Identify X and Y.

A. $X = CO_2, Y = Cl_2$

B. $X = Cl_2, Y = CO_2$

C. $X = Cl_2, Y = H_2$

D. $X = H_2, Y = Cl_2$

Answer: C

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19. $[X] + H_2SO_4 \rightarrow [Y]$ 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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20. A solution which is $10^{-3}M$ each in $Mn^{2+}, Fe^{2+}, Zn^{2+}$, and Hg^{2+} it treated with $10^{-16}M$ sulphide ion. If the K_{sp} of $MnS, FeS, ZnS$and HgS are $10^{-15}, 10^{-23}, 10^{-20}$,and 10^{-54}, respectively, which one will precipitate first?

A. FeS

B. MgS

C. HgS

D. ZnS

Answer: C

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21. A metal nitrate reacts with KI to give a black precipitate which on addition of excess of KI convert into orange colour solution. The cation of metal nitrate is

A. Hg^{2+}

B. Bi^{3+}

C. Pb^{2+}

D. Cu^{+}

Answer: B

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22. Which blue liquid is obtained on reacting equimolar amounts of two gases at $-30^{\circ}C$?

A. N_2O

B. N_2O_3

C. N_2O_4

D. N_2O_5

Answer: B

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23. A solution when diluted with H_2O and boiled, it gives a white precipitate. On addition of excess NH_4Cl/NH_4OH the volume of precipitate decreases leaving behind a white gelatinous precipitate. Identify the precipitate which dissolves in NH_4OH/NH_4Cl

A. $Zn(OH)_2$

B. $Al(OH)_3$

C. $Mg(OH)_2$

D. $Ca(OH)_2$

Answer: A

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24. $MgSO_4$ on reaction with NH_4OH and Na_2HPO_4 forms a white crystalline precipitate. What is its formula ?

A. $Mg(NH_4)PO_4$

B. $Mg_3(PO_4)_2$

C. $MgCl_2$, $MgSO_4$

D. $MgSO_4$

Answer: A

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25. 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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26. Upon treatment with ammonical 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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27. $3g$ of actived chacoal was added to 50mL of acetic acid solution $(0.06N)$ in a flask. After an hour it was filterred and the strength of the filtrate was found to be $0.042N$. The amount of acetic adsorbed (per gram of charcoal) is:

A. 18 mg

B. 36 mg

C. 42 mg

D. 54 mg

Answer: A

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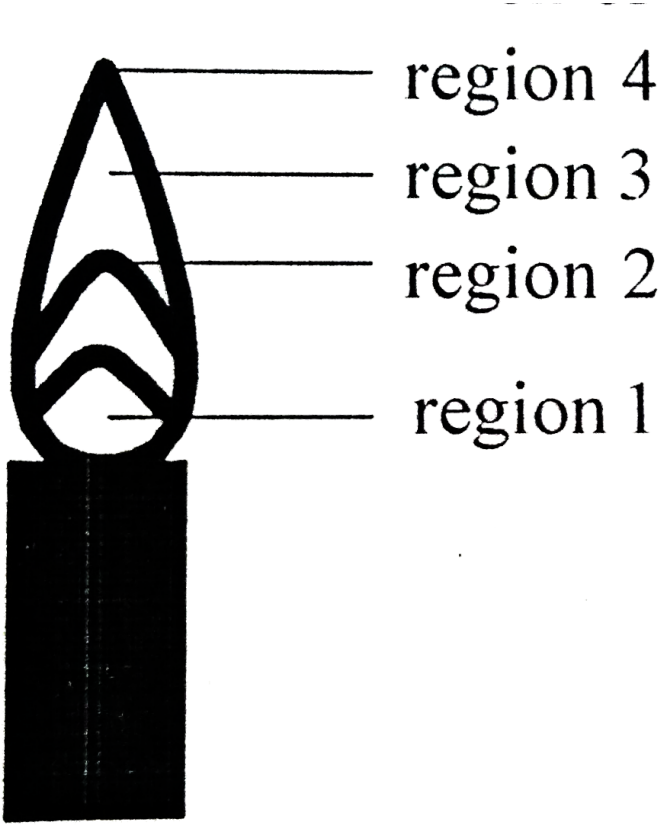
28. The hottest region of Bunsen flame shown in the figure below is :



A. Region 2

B. Region 3

C. Region 4

D. Region 1

Answer: A

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29. When metal 'M' is treated with NaOH, a white gelatinous precipitate 'X' is obtained, which is soluble in excess of NaOH. Compound 'X' when heated strongly gives an oxide which is used in chromatography as an adsorbent. The metal 'M' is

A. Ca

B. Al

C. Fe

D. Zn

Answer: B

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30. An alkali is titrated against an acid with methyl orange as indicator, which of the following is a correct combination?

A. Base Acid End point
Strong Strong Pinkish red to yellow

B. Base Acid End point
Weak Strong Yellow to pinkish red

C. Base Acid End point
Strong Strong Pink to colourless

D. Base Acid End point
Weak Strong Colourless to pink

Answer: B

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31. The reagents, NH_4CI and aqueous NH_3 will precipitate:

A. Ca^{2+}

B. Al^{3+}

C. Bi^{3+}

D. Mg^{2+}

Answer: :B

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32. Which of the following statement (s) is (are) correct when a mixture of $NaCl$ and $K_2Cr_2O_7$ is gently warmed with conc. H_2SO_4 ?

A. A deep red vapour is evolved

B. The vapours when passed into NaOH solution gives a yellow solution of Na_2CrO_4

C. Chlorinegas is evolved

D. Chromyl chloride is formed

Answer: A::B:C:D

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33. Which of the following statement(s) is (are) correct with reference to the ferrous and ferric ions ?

A. Fe^{3+} gives brown colour with potassium ferricyanide.

B. Fe^{2+} gives blue precipitate with potassium ferricyanide.

C. Fe^{3+} gives red colour with potassium thiocyanate.

D. Fe^{2+} gives brown colour with ammonium thocyanate.

Answer: B::C

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34. Which of the following change the colour of the aqueous solution of $FeCl_3$

A. $K_4\left[Fe(CN)_6\right]$

B. H_2S

C. NH_4CNS

D. $KCNS$

Answer: A::B::C::D

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35. The pair (s) of ions where both the ions are precipitate upon passing H_2S gas in presence of dilute HCl, is (are)

A. Ba^{2+}, Zn^{2+}

B. Bi^{3+}, Fe^{3+}

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

D. Hg^{2+}, Bi^{3+}

Answer: C::D

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36. Match the entries listed in column I with appropriate entries listed in column II.

	Column I		Column II
(A)	Colourless gas evolved on addition of dil. H_2SO_4	(p)	$CH_3CO_2^-$
(B)	White ppt. on addition of $AgNO_3$	(q)	NO_2^-
(C)	Black ppt. obtained when $HgCl_2$ is added in little amount	(r)	S^{2-}
(D)	The ppt. obtained on addition of $AgNO_3$ followed by NH_3 solution	(s)	$S_2O_3^{2-}$

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Jee Section Reasoning Type Questions

1. Assertion (A): A is very dilute acidic solution of Cd^{2+} and Ni^{2+} gives yellow precipitate of CdS on passing hydrogen sulphide.

Reason (R) : Solubility product of CdS is more than that of NiS.

A. Statement 1 is true, statement 2 is true, statement 2 is a correct explanation for statement 1

B. Statement 1 is true, statement 2 is true, statement 2 is not a correct explanation for statement 1

C. Statement 1 is true, statement 2 is false

D. Statement 1 is false, statement 2 is true

Answer: C

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2. Statement I Sulphate is extimated as $BaSO_4$, not as $MgSO_4$.

Statement II Ionic radius of Mg^{2+} is smaller than that of Ba^{2+}.

A. Statement 1 is true, statement 2 is true, statement 2 is a correct explanation for statement 1

B. Statement 1 is true, statement 2 is true, statement 2 is not a correct explanation for statement 1

C. Statement 1 is true, statement 2 is false

D. Statement 1 is false, statement 2 is true

Answer: B

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3. Assertion : In the iodometric titration, starch is used as an indicator.

Reason : Starch is a polysaccharide.

A. Statement 1 is true, statement 2 is true, statement 2 is a correct explanation for statement 1

B. Statement 1 is true, statement 2 is true, statement 2 is not a correct explanation for statement 1

C. Statement 1 is true, statement 2 is false

D. Statement 1 is false, statement 2 is true

Answer: B

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4. Statement 1: Basic radical of V group are precipitated as their carbonates in presence of NH_4Cl

Statement 2: NH_4OH maintains the pH of the solution basic.

A. Statement 1 is true, statement 2 is true, statement 2 is a correct explanation for statement 1

B. Statement 1 is true, statement 2 is true, statement 2 is not a correct explanation for statement 1

C. Statement 1 is true, statement 2 is false

D. Statement 1 is false, statement 2 is true

Answer: D

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5. Statement 1: Ammonium phosphomolybdate is a yellow compound. Statement 2: If yellow precipitate is obtained on adding ammonium molybdate solution on boiling then phosphate radical is identified.

A. Statement 1 is true, statement 2 is true, statement 2 is a correct explanation for statement 1

B. Statement 1 is true, statement 2 is true, statement 2 is not a correct explanation for statement 1

C. Statement 1 is true, statement 2 is false

D. Statement 1 is false, statement 2 is true

Answer: B

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Jee Section Comprehension Type Question

1. An aqueous solution of a mixture of two inorganic salts, when treated with dilute HCl, gave a precipiate (P) and 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 ammoniacal medium. The precipitate R gave a coloured solution (S), when treated with H_2O_2 in an aqueous $NaOH$ medium.

The precipitate P contains

A. Pb^{2+}

B. Hg_2^{2+}

C. Ag^{+}

D. Hg^{2+}

Answer: A

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2. An aqueous solution of a mixture of two inorganic salts, when treated with dilute HCl, gave a precipiate (P) and 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 ammoniacal 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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3. A coloured compound (A) reacts with dilute H_2SO_4 to produce a colourless gas (B) and colourless solution (C). The reaction between (B) and the acidified $K_2Cr_2O_7$ solution produces a green solution and a slightly yellowise precipitate (D). the substance (D) burns in air to produce a gas (E) which also can change the colour of $K_2Cr_2O_7$ solution.

Q. "A" probably, is

A. $ZnSO_3$

B. CoS

C. MnS

D. NiS

Answer: C

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4. A coloured compound (A) reacts with dilute H_2SO_4 to produce a colourless gas (B) and colourless solution (C). The reaction between (B) and the acidified $K_2Cr_2O_7$ solution produces a green solution and a slightly yellowise precipitate (D). the substance (D) burns in air to produce a gas (E) which also can change the colour of $K_2Cr_2O_7$ solution.

Q. When "B" reacts with "E"

A. A new gas F will be produced

B. It produces D and a colourless liquid

C. There will be no reaction between them

D. It yields B and an acidic oxide

Answer: B

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5. A coloured compound (A) reacts with dilute H_2SO_4 to produce a colourless gas (B) and colourless solution (C). The reaction between (B) and the acidified $K_2Cr_2O_7$ solution produces a green solution and a slightly yellowise precipitate (D). the substance (D) burns in air to produce a gas (E) which also can change the colour of $K_2Cr_2O_7$ solution.

Q. Which is not correct about E

A. It is colourless and higly water soluble

B. The molecule is linear

C. Its aqueous solution is acidic

D. It turns starch iodate paper blue

Answer: B

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6. A coloured compound (A) reacts with dilute H_2SO_4 to produce a colourless gas (B) and colourless solution (C). The reaction between (B) and the acidified $K_2Cr_2O_7$ solution produces a green solution and a slightly yellowise precipitate (D). the substance (D) burns in air to produce a gas (E) which also can change the colour of $K_2Cr_2O_7$ solution.

Q. When D is boiled with alkaline sulphite solution a compound F is formed. F can be used in

(I) Iodine titrations in volumetric analysis

(II) Bleaching industry to destroy excess Cl_2

(III) Photography for 'fising' films

(IV) Iodometric titrations

Choose the correct codes

A. I and IV

B. I,III and IV

C. II and III

D. I,II,III and IV

Answer: D

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7. A coloured compound (A) reacts with dilute H_2SO_4 to produce a colourless gas (B) and colourless solution (C). The reaction between (B) and the acidified $K_2Cr_2O_7$ solution produces a green solution and a slightly yellowise precipitate (D). the substance (D) burns in air to produce a gas (E) which also can change the colour of $K_2Cr_2O_7$ solution.

Q. When colourless solution (C) reacts with Pb_3O_4 / H^+, it acquires a violet red colour due to formation of

A. MnO_4^-

B. PbO_2

C. I_3^{2-}

D. $[Ni(en)_3]S_2O_3$

Answer: A

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Jee Section Integer Type Questions

1. 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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2. Amongst the following, the total number

of compound 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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3. An aqueous solution containing Hg^{2+}, Hg_2^{2+}, Pb^{2+} and Cd^{2+} ions will give precipitate of _ _ _ with dil. HCl

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