



CHEMISTRY

BOOKS - VK JAISWAL ENGLISH

QUALITATIVE INORGANIC ANALYSIS

LEVEL 1

1. $Fe(OH)_3$ can be separated from $Al(OH)_3$ by addition of:

A. $BaCl_2$

B. Dil. HCl

C. NaOH solution

D. NH_4Cl & NH_4OH

Answer: C



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2. Cations present in slightly acidic solution are Al^{3+} , Zn^{3+} and Cu^{3+} .

The reagent which when added in excess to this solution would identify and separate Cu^{2+} in one step is:

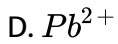
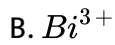
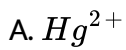
- A. HCl acid
- B. NH_3 solution
- C. NaOH solution
- D. Na_2CO_3 solution

Answer: C

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3. When a KI solution is added to a metal nitrate, a black precipitate is produced which dissolves in an excess of KI to give an orange solution.

The metal ion is:



Answer: B



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4. Which is not easily precipitated for aqueous solution ?



Answer: C



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5. Soda extract is useful when given mixture has any insoluble salt, it is prepared by:

- A. fusing soda and mixture and then extracting with water
- B. dissolving $NaHCO_3$ and mixture in dil. HCl
- C. boiling Na_2CO_3 and mixture in dil. HCl
- D. boiling Na_2CO_3 and mixture in distilled water

Answer: D



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6. An aqueous solution of a substance, on treatment with dilute HCl, gives a white precipitate soluble in hot water. When H_2S is passed through the hot acidic solution, a black precipitate is formed. The substance is:

- A. Hg_2^{2+} salt

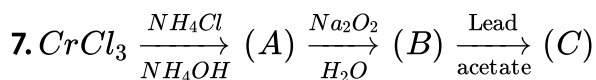
B. Cu^{2+} salt

C. Ag^+ salt

D. Pb^{2+} salt

Answer: D

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In this reaction sequence, the compound (C) is:

A. Na_2CrO_4

B. $Na_2Cr_2O_7$

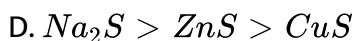
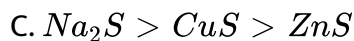
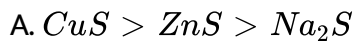
C. $Cr(OH)_3$

D. $PbCrO_4$

Answer: D

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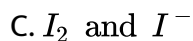
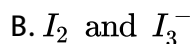
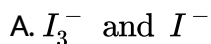
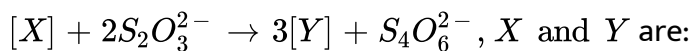
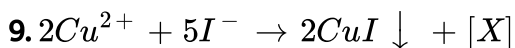
8. Identify the correct order of solubility in aqueous medium-



Answer: D



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D. I_3^- and I_2

Answer: A

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10. In Nessler's reagent, the ion present is

A. HgI^{2-}

B. HgI_4^{2-}

C. Hg^+

D. Hg^2

Answer: B

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11. A reddish pink substance on heating gives off a vapour which condenses on the sides of the test tube and the substance turns blue. It on cooling, water is added to the residue then, it turns to its original colour. The substance is:

- A. Iodine crystals
- B. Copper sulphate crystals
- C. Cobalt chloride crystals
- D. Zinc oxide

Answer: C

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12. Oxalate + MnO_2 + dil. H_2SO_4 → Gas. The gas evolved is

- A. CO_2
- B. CO

C. SO_2

D. O_2

Answer: A

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13. Which of the following reagents can used to identify bromide and iodide ions in the presence of organic layer?

A. Chlorine water

B. Silver nitrate solution

C. Starch solution

D. Concentrated sulphuric acid

Answer: A

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14. To avoid the precipitation of hydroxides of Ni^{2+} , Co^{2+} , Zn^{2+} and Mn^{2+} along with those of Fe^{3+} , Al^{3+} and Cr^{3+} the third group cations, solution should be:

- A. Heated with a few drops of conc. HNO_3
- B. Treated with excess of NH_4Cl
- C. Concentrated to small volume
- D. None of these

Answer: B



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15. Which set gives yellow ppt.?

- A. KO_3 , Sb_2S_3 , CdS
- B. Sb_2S_3 , CdS , $PbCrO_4$
- C. $PbCrO_4$, As_2S_3 , SnS_2

D. SnS_2 , As_2S_3 , $PbCrO_4$, PbO

Answer: C

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16. Which of the following reagent can be used to separate $AgCl$ and AgI ?

A. KCN

B. $Na_2S_2O_3$

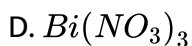
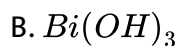
C. HNO_3

D. NH_3

Answer: D

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17. Brown ppt.(A) dissolves in HNO_3 gives (B) which gives white ppt. (C) with NH_4OH . (C) on reaction with HCl gives solution (D) which gives white turbidity on addition of water. What is (D)?

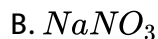
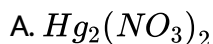


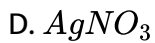
Answer: A



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18. Which nitrate on decomposition will give metal?

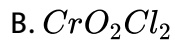
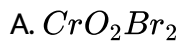




Answer: A::D

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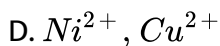
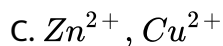
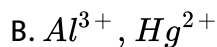
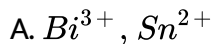
19. Which of the followingg compounds does not exist?



Answer: A

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20. Which one among the following pairs of ions cannot be separated by H_2S in dilute HCl?

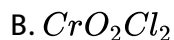
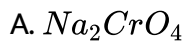


Answer: A



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21. Salt (A) gives brick red fumes (B) with conc. H_2SO_4 and $K_2Cr_2O_7$ which gives yellow solution (C) with NaOH and it gives yellow ppt. (D) with acetic acid and lead acetate. What is (C)?



C. $PbCrO_4$

D. $NaCl$

Answer: A



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22. When a nitrate is warmed with zinc powder and an NaOH solution, a gas is evolved. Which of the following reagents will be turned brown by the gas?

A. Sodium nitroprusside

B. Sodium cobaltinitrite

C. Nessler's reagent

D. Barium chloride

Answer: C



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23. To avoid the precipitation of hydroxides of Ni^{2+} , Co^{2+} , Zn^{2+} and Mn^{2+} along with those of Fe^{3+} , Al^{3+} and Cr^{3+} the third group cations, solution should be:

- A. Heated with a few drops of conc. HNO_3
- B. Treated with excess of NH_4Cl
- C. H_2S gas is passed into solution
- D. None of these

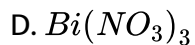
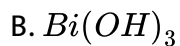
Answer: B



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24. Brown ppt.(A) dissolves in HNO_3 gives (B) which gives white ppt. (C) with NH_4OH . (C) on reaction with HCl gives solution (D) which gives white turbidity on addition of water. What is (D)?

A. $BiCl_3$



Answer: A

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25. What is the oxidation number of iron in the brown ring complex compound ?

A. 0

B. 1

C. +2

D. +3

Answer: B

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26. On adding KI solution in excess to a solution of $CuSO_4$, we get a precipitate 'P' and another liquor 'M'. Select the correct pair:

- A. P is CuI and M is I_2 solution
- B. P is CuI_2 and M is I_2 solution
- C. P is CuI and M is KI_3 solution
- D. P is CuI_2 and M is KI_3 solution

Answer: C

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27. On heating a mixture of NaBr and conc. H_2SO_4 we obtain:

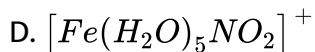
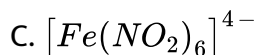
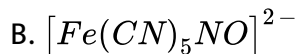
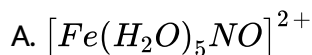
- A. $HOBr$
- B. HBr
- C. Br_2



Answer: B::C

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28. Which of the following complexes is responsible for the brown colour of the ring formed in the ring test for the nitrates?



Answer: A

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29. There is mixture of Cu(II) chloride and Fe(II) sulphate. The best way to separate the metal ions from the mixture in qualitative analysis is:

A. hydrogen sulphide in acidic medium, where only Cu(II) sulphide will be precipitated

B. ammonium hydroxide buffer, where only Fe(II) hydroxide will be precipitated

C. hydrogen sulphide in acidic medium, where only Fe(II) sulphide will be precipitated

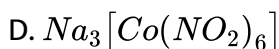
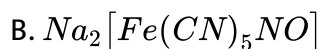
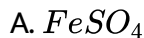
D. ammonium hydroxide buffer, where only Cu(II) hydroxide will be precipitated

Answer: A



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30. Which of the following reagents can be used to distinguish between a sulphite and a sulphate in solution?

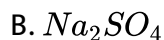


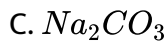
Answer: C



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31. A doctor by mistake administers a $Ba(NO_3)_2$ solution to a patient for radiography investigations. Which of the following should be given as the best to prevent to adsorption of soluble barium?



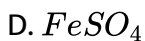
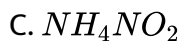


Answer: B



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32. A colourless water soluble solid (X) on heating gives equimolar quantities of (Y) and (Z). Y gives dense white fumes with HCl and Z does so with NH_3 . Y gives brown ppt. with K_2HgI_4 (Nessler's reagent) and Z gives white precipitate with nitrates of Ag^+ , Pb^{2+} and Hg^+ . What is X ?



Answer: A



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33. The colour of the iodine solution is discharged by shaking with

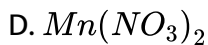
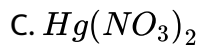
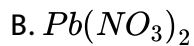
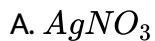
- A. sodium sulphate
- B. sodium sulphide
- C. aqueous sulphur dioxide
- D. sodium bromide

Answer: B::C



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34. 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 be



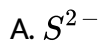
Answer: B



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35. In an alkaline solution, sodium nitroprusside gives a violet colour with

:



Answer: A

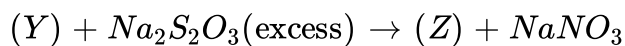
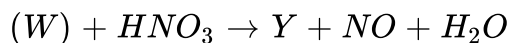
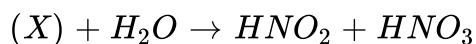
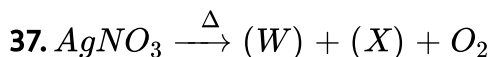
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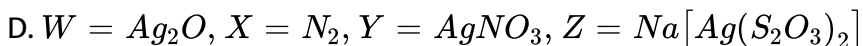
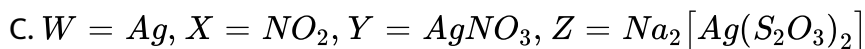
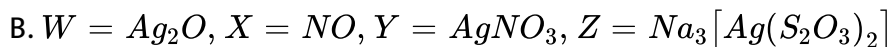
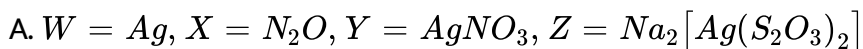
36. A pale yellow precipitate and a gas with pungent odour are formed on warming dilute hydrochloric acid with an aqueous solution containing

- A. sulphate ion
- B. sulphide ion
- C. thiosulphate ion
- D. sulphite ion

Answer: C

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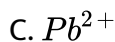
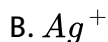
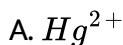
Answer: C

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38. Consider the following sequence of tests,



The metal ion (M^{n+}) would be:

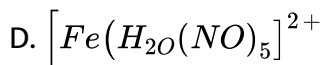
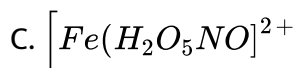
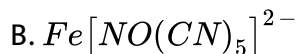
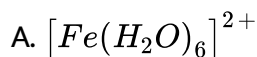


Answer: C



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39. The brown ring test for NO_3^- is due to the formation of the complex ion with formula as

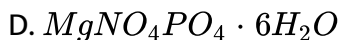
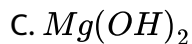
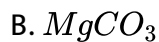
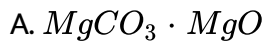


Answer: C



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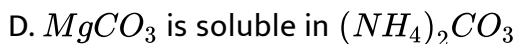
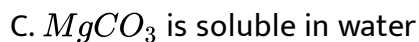
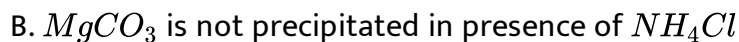
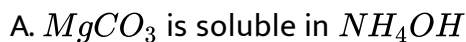
40. Which of the following compounds does magnesium precipitate when you test for it?



Answer: D

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41. $MgCO_3$ is not precipitated with the carbonates of Vth group radicals in presence of NH_4Cl and NH_4OH because:



Answer: B

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42. Which of the following salt gives green colour mass in cobalt nitrate/charcoal cavity test?

A. Zn salts

B. Al salts

C. Alums

D. Copper salts

Answer: A

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43. Yellow coloured compound is:

A. NH_4CNS

B. $PbCrO_4$

C. NaOH

D. $\text{K}_4[\text{Fe}(\text{CN})_6]$

Answer: B::D



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44. Which of the following tests can you identify K^+ in a salt?

A. Flame test (violet) and precipitation (yellow) with sodium cobaltinitrite

B. Flame test (violet) and precipitation (violet) with sodium cobaltinitrite

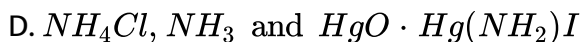
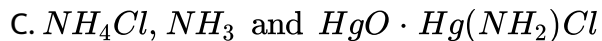
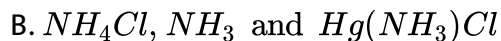
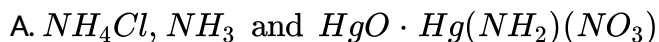
C. Flame test (crimson) and precipitation (yellow) with sodium cobaltinitrite

D. Flame test (golden) and precipitation (violet) with sodium cobaltinitrite

Answer: A

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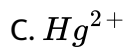
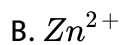
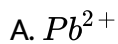
45. A chloride salt on addition of alkali solution gives gas B which gives brown ppt. with nessler's reagent. What is A, B and C?



Answer: D

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46. An inorganic salt is strongly heated. The residue is yellow when hot and white when cold. The salt contains:

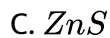


Answer: B



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47. Which of the following sulphides is white?



Answer: C



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48. The gas evolved in which of the following reactions forms the iodide of Millon's base on being passed through a solution of $[HgI_4]^{2-}$ in KOH?

- A. $CaSO_4$ treated with dilute HCl
- B. NH_4Cl boiled with NaOH
- C. ZnS treated with dilute H_2SO_4
- D. $MgCO_3$ heated alone

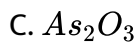
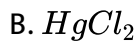
Answer: B



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49. A white, sublimable inorganic substance gives a brown precipitate on treatment with nessler's reagent and a white precipitate (soluble in NH_3) with an $AgNO_3$ solution. The substance is :

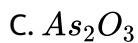
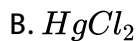
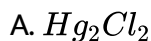
- A. Hg_2Cl_2



Answer: D

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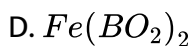
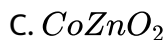
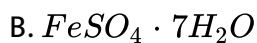
50. A white sublimable substance, that turns black on treatment with an NH_3 solution can be:



Answer: A

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51. Rinman's green is:

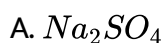


Answer: C



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52. A white crystalline salt imparts a violet colour to a Bunsen flame, and with hot concentrated H_2SO_4 , forms a pungent gas. On treatment with an $AgNO_3$ solution, this gas forms a white precipitate readily soluble in NH_3 . The white crystalline salt may be:



B. KCl

C. $CaCl_2$

D. $SrCl_2$

Answer: B



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53. A which solid gives a green residue on being subjected to the cobalt nitrate test. on being warmed with concentrated H_2SO_4 , the solid gives a brown gas, which evolves vigorously on the addition of Cu turnings. The solid may be:

A. $Zn(NO_3)_2$

B. $Al(NO_3)_3$

C. $ZnBr_2$

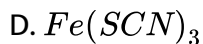
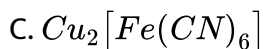
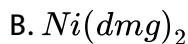
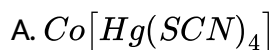
D. $Mg(NO_3)_2$

Answer: A



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54. Which of the following is blue?

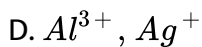
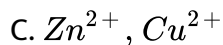
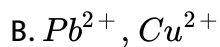
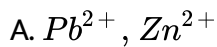


Answer: A



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55. Which of the following pairs of cations cannot be separated by using an NH_3 solution?

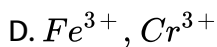
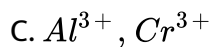
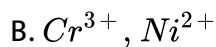
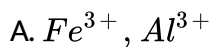


Answer: C



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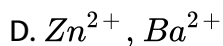
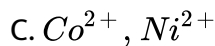
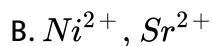
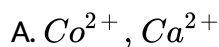
56. Which of the following pairs of cations can be separated by adding NH_4Cl and NH_4OH to the mixture?



Answer: B

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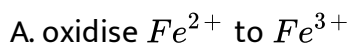
57. Which of the following pairs of cations cannot be separated by adding NH_4Cl and NH_4OH to the mixture and then passing H_2S through it?



Answer: C

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58. Before adding the reagents of group III, the solution is heated with some concentrated HNO_3 in order to :



B. oxidise Cr^{3+} to $Cr_2O_7^{2-}$

C. lower than pH

D. increase the NO_3^-

Answer: A

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59. Which of the following pairs of sulphides are insoluble in dilute HCl?

A. CoS and NiS

B. CoS and MnS

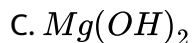
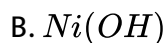
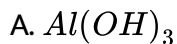
C. NiS and MnS

D. NiS and ZnS

Answer: A

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60. If a solution containing Al^{3+} , Ni^{3+} and Mg^{3+} is first created with NH_4Cl and then with NH_4OH , which of the following will precipitate?

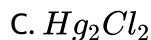
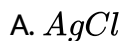


Answer: A



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61. Which of the following leaves a black residue on the addition of NH_3 ?



D. $HgCl_2$

Answer: C

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62. Which of the following is not soluble in hot an conc. HNO_3 ?

A. PbS

B. NiS

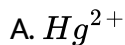
C. CuS

D. HgS

Answer: D

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63. Which of the following cations will form an insoluble red-brown compound with $[Fe(CN)_6]^{4-}$?

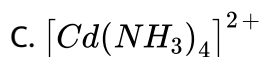
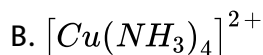
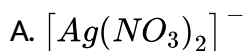


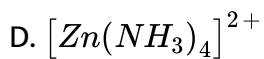
Answer: C



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64. Which of the following, on treatment with KCN, will give cyanogen gas?



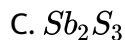
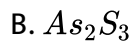


Answer: B



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65. Which of the following is insoluble in yellow ammonium polysulphide?

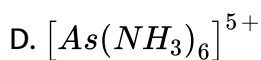
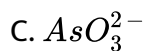
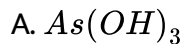


Answer: A



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66. Which of the following is formed when As_2S_3 is warmed with NH_4OH and H_2O_2 ?



Answer: B



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67. The role of NH_4Cl in the precipitation of the hydroxides of group III cations is to:

A. increase the Cl^-

B. facilitate the dissociation of NH_4OH

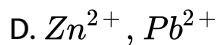
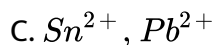
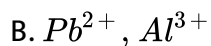
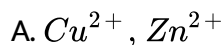
C. suppress the dissociation of NH_4OH by the common ion effect

D. render the solution weakly acidic

Answer: C

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68. Which of the following pairs of cations can be separated by using on adding NaOH solution?



Answer: A

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69. On heating, a salt gives a gas which turns lime water milky and an acidified dichromate solution green. The salt may be:

- A. carbonate
- B. sulphide
- C. sulphate
- D. sulphite

Answer: D



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70. Reaction of $Zn(OH)_2$ with $NaOH$ produces:

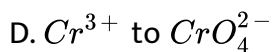
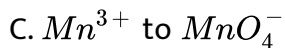
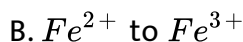
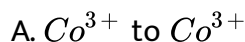
- A. Na_2ZnO_2
- B. ZnO
- C. Na_2O
- D. None of these

Answer: A



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71. In group separation, before precipitating out group III metal ions as hydroxides, it is necessary to boil the solution of the salt mixture with a few drops of concentrated HNO_3 is treated. This is done to convert:



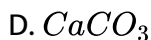
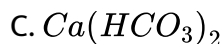
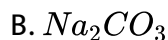
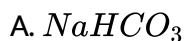
Answer: B



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72. The compound A on heating gives a colourless gas and a residue that dissolved in water to obtain B. Excess of CO_2 is bubbled through aqueous solution of B, C is formed which is recovered in the solid form.

Solid C on gentle heating gives back A. The compound is:-



Answer: D



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73. An aqueous solution of a substance gives a white precipitate on treatment with dil HCl , which dissolves on heating. On passing H_2S in hot acidic solution a black precipitate is formed. The substance is:

A. Hg_2^{2+} salt

B. Hg^{2+} salt

C. Ag^+ salt

D. Pb^{2+} salt

Answer: D



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74. A solid mixture of $AgCl$ and $K_2Cr_2O_7$ is heated with conc. H_2SO_4 and produces:

A. greenish yellow gas

B. colourless gas

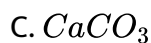
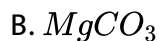
C. red coloured gas

D. no gas

Answer: D

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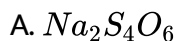
75. Which of the following has the highest value of K_p ?



Answer: A

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76. When copper sulphate solution is treated with potassium iodide and excess of hypo solution is added in resulting solution, a white precipitate is formed. The white ppt. is due to formation of:

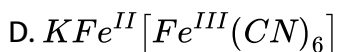
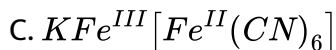
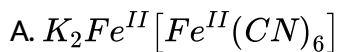




Answer: C

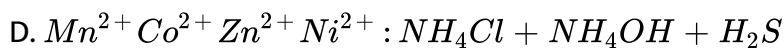
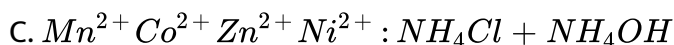
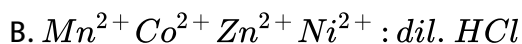
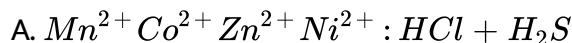
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77. The ferrous ion in a given sample is detected by the formation of a white precipitate on the addition of a potassium ferrocyanide solution to it. The precipitate has the constitutional formula:



Answer: A

78. Which one is correct group reagent for group cations?



Answer: D

79. Cobalt salt + $KNO_2 + CH_3COOH \rightarrow$ yellow ppt. the yellow precipitate is:

A. Potassium cobaltantrate

B. Potassium cobaltinitrite

C. Cobalt nitrite

D. Cobalt nitrate

Answer: B

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80. Sulphide ions react with $Na_2[Fe(NO)(CN)_5]$ to form a purple coloured compound $Na_4[Fe(CN)_5(NOS)]$. In the reaction, the oxidation state of iron is:

A. Changes from +2 to +3

B. Changes from +3 to +2

C. Changes from +2 to +4

D. Does not change

Answer: D

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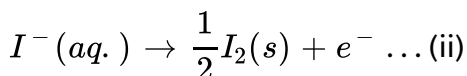
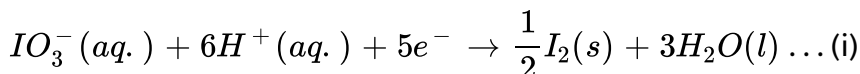
81. White crystal (A) on treatment with $AgNO_3$ gives white crystalline precipitate. (A) discharges the colour of $KMnO_4$ solution but no gas is evolved. Probable radical present in (A) is:



Answer: C

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82. Iodate ions (IO_3^-) can be reduced to iodine by iodide ions. The half equations which represent the redox reaction are:



How many moles of iodine are produced for every mole of iodate ions consumed in the reaction?

A. 0.5

B. 1

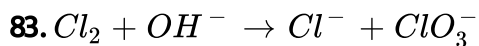
C. 2.5

D. 3

Answer: D



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What is the coefficient for OH^- when this equation is balanced with the smallest interger coefficients ?

A. 2

B. 3

C. 4

D. 6

Answer: D

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84. A solution of metal hydroxide (MOH) with copper sulphate and mixed tartarate of metal M with another metal M_1 of the same group is used in the detection of $-CHO$ froup. Metal M and M_1 are respectively

A. K, Na

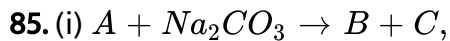
B. K, Rb

C. Na, Li

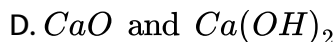
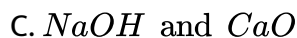
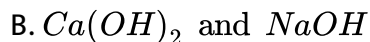
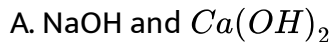
D. Rb, Na

Answer: A

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(ii) $A \xrightarrow{CO_2}$ (Milky) C. Itbr. The chemical formula of A and B are respectively:



Answer: B



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86. 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 impurity

B. (IV) grou radicals are precipitated as sulphides

C. the oxidation of H_2S gas by some acid radicals

D. III group radicals are precipitated as hydroxides

Answer: C

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87. Incorrect order of solubility product (K_{sp}) of given precipitated compound is:

A. $AgCl < PbCl_2$

B. $Al(OH)_3 < Zn(OH)_2$

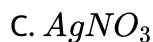
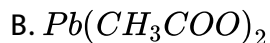
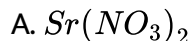
C. $BaCO_3 < MgCO_3$

D. $MnS < Ag_2S$

Answer: D

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88. On adding KI to a metal salt solution, no precipitate was observed but the salt solution gives yellow precipitate with K_2CrO_4 in the presence of CH_3COOH . Then the salt is:

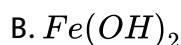
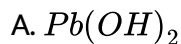


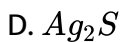
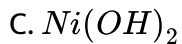
Answer: D



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89. Which of the following precipitate is soluble in excess of NH_3 solution?



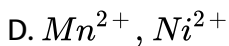
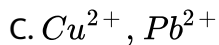
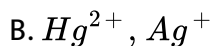
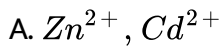


Answer: C



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90. When of the following precipitate is soluble in excess of NH_3 solution?

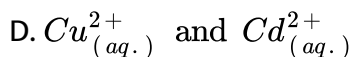
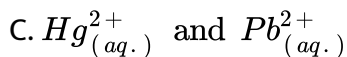
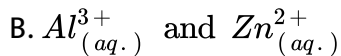
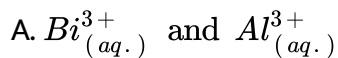


Answer: A



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91. Which of the following mixtures can be separated by using excess NH_3 solution?

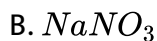


Answer: B



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92. Which of the following salt on heating with concentrated H_2SO_4 , coloured vapours do not evolve?



D. KI

Answer: C

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LEVEL 2

1. When a reagent (X) reacts with Fe^{3+} salt solution turns red due to the formation of a compound (Y). This reagent cause no change in colour with Fe^{2+} salt solution. Compound (X) and (Y) are respectively:

A. NH_4SCN and $Fe(SCN)_3$

B. $K_4[Fe(CN)_6]$ and $FeSO_4$

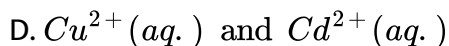
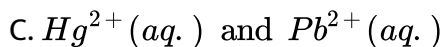
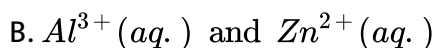
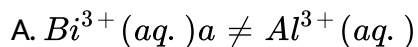
C. Na_2HPO_4 and $FeSO_4$

D. $K_3[Fe(CN)_6]$ and $K_2Fe[Fe(CN)_6]$

Answer: A

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2. Which of the following mixtures can be separated by using excess NH_3 solution?

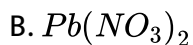
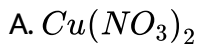


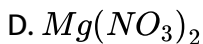
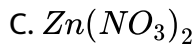
Answer: B



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3. Which of the following salt will not give positive brown ring test?



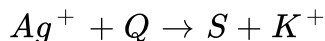
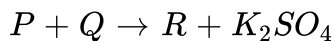


Answer: B

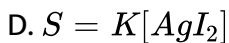
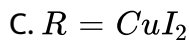
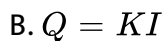
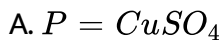


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4. Consider the following reactions



Then according to given information the incorrect match is:



Answer: D



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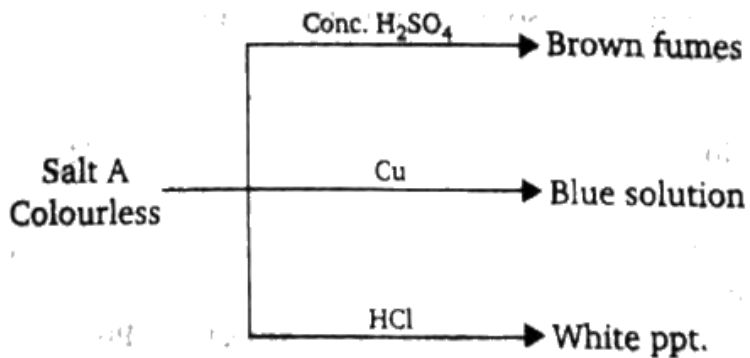
5. A very dilute acidic solution of Cd^{2+} and Ni^{2+} gives only yellow ppt. of CdS on passing H_2S , this is due to

- A. Solubility product (K_{sp}) of CdS is more than that of NiS
- B. Solubility product (K_{sp}) of CdS is less than that of NiS
- C. Cd^{2+} belongs to *IIB* group while Ni^{2+} belongs to *IVth* group
- D. CdS is insoluble in yellow ammonium sulphide (YAS)

Answer: B



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6. Identify salt (A) satisfying above chemical property:

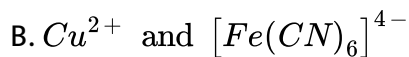
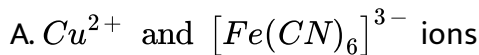
- A. $Cu(NO_3)_2$
- B. $NaNO_3$
- C. $AgNO_3$
- D. $Pb(NO_3)_2$

Answer: C



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7. Reddish brown (chocolate) precipitate is formed by mixing solutions containing:



Answer: B

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8. Water soluble mixture $\xrightarrow[\text{(ii) . dil .HCl}]{\text{(i) . BaCl}_2}$ White ppt.

Filtrate+(Hot and conc.) $HNO_3 + BaCl_2 \rightarrow$ White ppt.

The mixture contains:



C. both (a) and (b)

D. none of these

Answer: C



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9. Which of the following compounds after mixing can produce blue colouration?

(I) $K_4[Fe(CN)_6]$ and $FeCl_3$ solution

(II) NH_4OH and $CuSO_4$ solution

(III) Adding anhydrous $CuSO_4$ to water

(IV) $NH_4OH + NiSO_4$ solution

Choose the correct code:

A. I,II,III

B. II,III

C. I,III

D. I,II,III,IV

Answer: D

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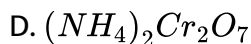
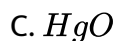
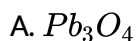
10. A bromide ion does not interfere with the chromyl chloride test because when a bromide is present:

- A. Br_2 is liberated, which leaves the NaOH solution colourless
- B. CrO_2Br_2 formed does not volatilise as CrO_2Cl_2 does
- C. CrO_2Br_2 does not react with NaOH
- D. no gaseous substance containing bromine is produced

Answer: A

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

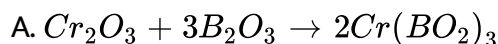


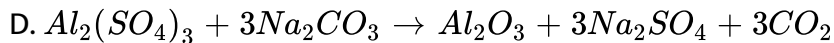
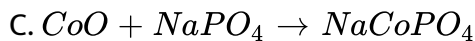
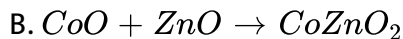
Answer: B



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12. Which of the following reaction(s) relevant to the microcosmic salt bead test?





Answer: C



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13. Solid KCl, when heated with solid $K_2Cr_2O_7$ and concentrated H_2SO_4 , gives red vapours (a) that turn NaOH solution yellow (b). The yellow solution, when acidified with acetic acid and treated with lead acetate, gives a yellow precipitate (c). which of the following is true with respect to a, b and c?

A. a and b contain CrO_4^{2-}

B. a and c contain CrO_4^{2-}

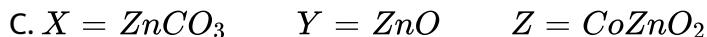
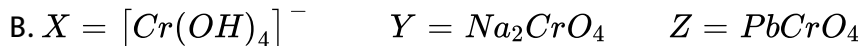
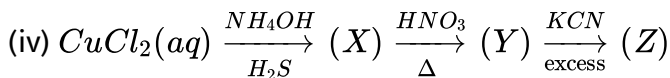
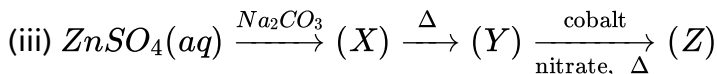
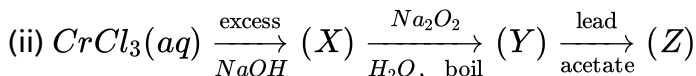
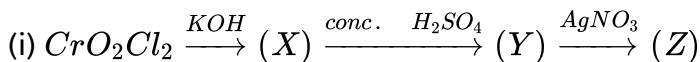
C. a, b and c contain CrO_4^{2-}

D. a, b and c contain Cr(VI)

Answer: D

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14. Choose the correct code by identifying (X), (Y) and (Z) in each case for the changes indicated:



Answer: D

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15. A salt, when warmed with zinc powder and an NaOH solution, gives a gas that turns a filter paper soaked with an alkaline solution of $K_2[HgI_4]$ brown. The salt responds to the brown ring test when acetic acid is used in place of sulphuric acid. The anion present in the salt is:



D. None of these

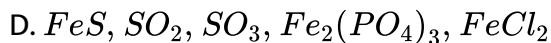
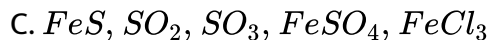
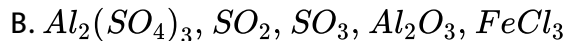
Answer: B



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16. A sulphate of a metal (A) on heating evolves two gases (B) and (C) and an oxide (D). Gas (B) turns $K_2Cr_2O_7$ paper green while gas (C) forms a trimer in which there is no $S - S$ bond. Compound (D) with HCl, forms a

Lewis acid (E) which exists as a dimer. Compounds (A), (B), (C), (D) and (E) are respectively:

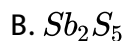
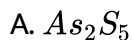


Answer: A



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17. $X + HNO_3 \rightarrow Y + NO_2 + H_2O + S$, Y+Ammonium molybdate \rightarrow yellow ppt. identify X:



D. CdS

Answer: A

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18. $X \xrightarrow{\text{Dil. } H_2SO_4} Y \xrightarrow{\text{Dil. } HNO_3}$ Colloidal sulphur identify X?
(Black) (gas)

A. CuS

B. FeS

C. PbS

D. NiS

Answer: B

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19. A mixture of Na_2CO_3 and Na_2SO_3 is treated with dilute H_2SO_4 in a setup such that the gaseous mixture emerging can pass first through a solution of $BaCl_2$ and then the gaseous mixture passed through acidified $K_2Cr_2O_7$. Which of the following will you observe?

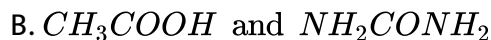
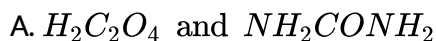
- A. The $BaCl_2$ solution remains unaffected and the acidified dichromate solution turns green
- B. The $BaCl_2$ solution gives a white precipitate and the acidified dichromate solution remains unaffected
- C. The $BaCl_2$ solution gives a white precipitate and the acidified dichromate solution turns green
- D. Both the solutions remain unaffected

Answer: B



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20. An organic compound (A) on heating produces two gases (B) and (C) and neutral oxide (D) which turns cobalt chloride paper pink. Gas (B) turns lime water milky and produces an acidic solution with water. Gas (C) produces a poisonous gas (E) with chlorine gas, the gas, this gas with ammonia gives an organic compound (F) which on further reaction with (D) gives NH_3 gas. Then, compound (A) and (F) can be found as:

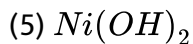
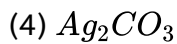
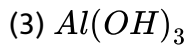
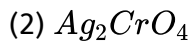
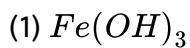


Answer: A



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21. Which of the following compounds is/are partially soluble or insoluble in NH_4OH solution:



A. 1,3,5

B. 2,3,4

C. 1,3

D. 2,3,5

Answer: C



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22. Which of the following will be precipitated when a solution containing calcium acetate, strontium acetate and barium acetate is treated with $(NH_4)_2SO_4$?

A. $CaSO_4$ and $SrSO_4$

B. $SrSO_4$ and $BaSO_4$

C. $BaSO_4$ and $CaSO_4$

D. $SrSO_4$ only

Answer: B

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23. Give the correct order of initials T or F for following statements. Use T iff statement is true and F if it is false.

(i) Cu^+ undergoes disproportionation to Cu and Cu^{2+} in aqueous solution.

(ii) Hg_2Cl_2 does not impart chromyl chloride test

(iii) Sulphide ions react with sodium nitroprusside to form a purple coloured complex. in this reaction, oxidation state of iron changes.

A. TFF

B. FTT

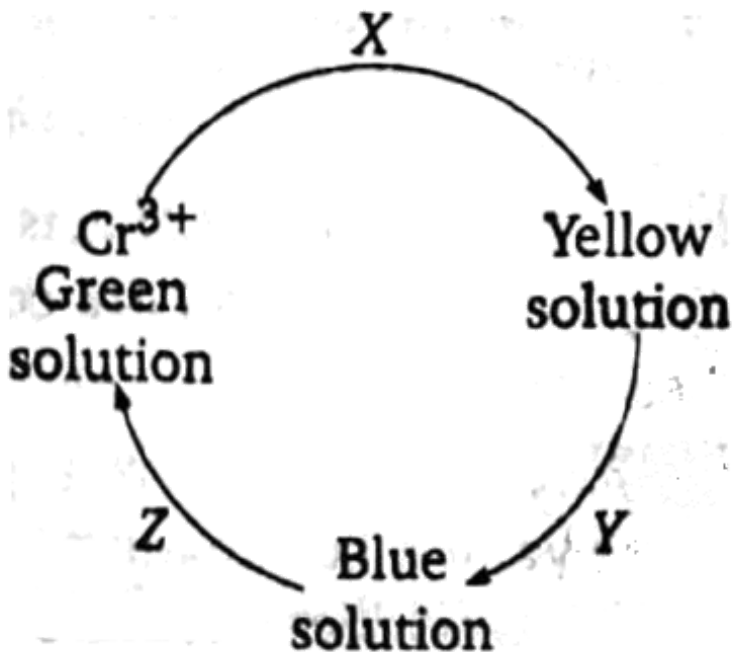
C. TFT

D. TTF

Answer: D

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24. In this sequence X, Y, Z are respectively:



A. Acidified H_2O_2 , alkaline H_2O_2 , acidified H_2O_2

B. Alkaline H_2O_2 , acidified H_2O_2 , Zn/HCl

C. Acidified H_2O_2 , Heat, alkaline H_2O_2

D. Alkaline H_2O_2 , acidified H_2O_2 , on standing

Answer: D

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25. What will be the colour of the solution when $Mn(OH)_2$ is treated with concentrated HNO_3 and sodium bismuthate (or red lead or lead dioxide)?

A. Yellow

B. Purple

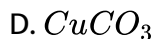
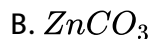
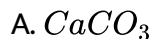
C. Green

D. Blue

Answer: B

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26. A white powder "A" on heating gave a non-combustible gas and a white residue. The residue on heating turns yellow. The residue dissolves in dil. HCl and the solution gives a white ppt. with $K_4[Fe(CN)_6]$. "A" would be:



Answer: B

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27. 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 green residue
- B. a yellow filtrate and brown residue
- C. a yellow filtrate and a green residue
- D. a green filtrate and a brown residue

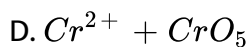
Answer: B



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28. When a solution of $Na_2Cr_2O_7$ is treated with amyl alcohol and acidified H_2O_2 , the layer of amyl alcohol turns blue. What is the blue colouration?

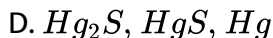
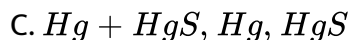
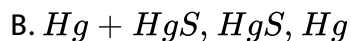
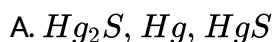
- A. Cr^{2+}
- B. CrO_5



Answer: B

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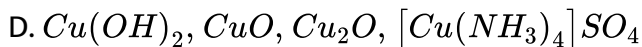
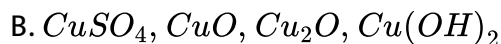
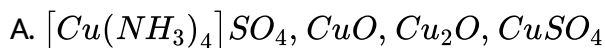
29. Hg_2^{2+} when reacts with H_2S , black ppt. (A) formed which when reacts with Na_2S followed by filtration leaving behind black ppt. (B). The filtrate with H^+ gives black ppt. (C). A, B and C are:



Answer: C

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30. (A) light blue coloured compound on heating will convert into black (B) which reacts with glucose gives red compound (C) and (A) reacts with ammonium hydroxide in excess in presence of ammonium sulphate give blue compound (D). What is (A), (B), (C) and (D)?



Answer: D



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31. A mixture of ferric alum, chrome alum and potash alum is dissolved in water and treated with an excess of NH_3 solution and warmed with a mixture of NaOH and H_2O_2 and filtered. We will get:

- A. a green residue and a yellow filtrate
- B. a brown residue and a yellow filtrate
- C. a brown residue and a green filtrate
- D. a blue residue and a green filtrate

Answer: B

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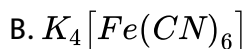
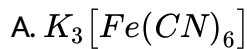
32. When KCN is added to $CuSO_4$ solution:

- A. KCN acts as a reducing agent
- B. KCN acts as a complexing agent
- C. $K_3[Cu(CN)_4]$ is formed
- D. All are correct

Answer: D

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33. Fe^{2+} and Fe^{3+} can be distinguished by



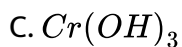
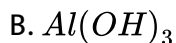
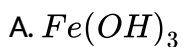
D. All are correct

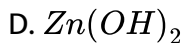
Answer: D



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34. Which of the following will not dissolve in a hot mixture of NaOH and H_2O_2 ?





Answer: A

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35. Match the following:

- | | |
|---------------------------------------|--|
| (I) HCO_3^- | (P) Obtained through Solvay's process |
| (II) K_2CO_3 | (Q) Green colouration due to $[Cr(H_2O)_6]^{3+}$ ion |
| (III) $S_2O_3^{2-} + FeCl_3$ solution | (R) Reduces $[Cu(C_4H_4O_6)_2]^{2-}$ to red ppt. |
| (IV) $SO_3^{2-} + K_2Cr_2O_7 / H^+$ | (S) Green colouration |
| (V) Na_2CO_3 | (T) Melts at $850^\circ C$ |

A. (P)-I,(Q),III,(R)-V,(S),IV, (T)-II

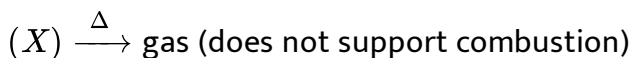
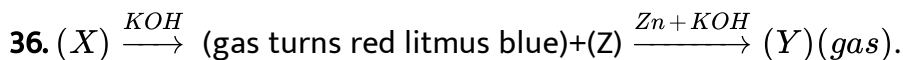
B. (P)-I,(Q)-III,(R)-II,(S)-IV,(T)-V

C. (P)-V,(Q)-IV,(R)-I,(S)-III,(T)-II

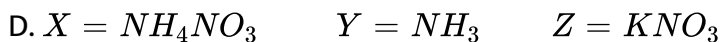
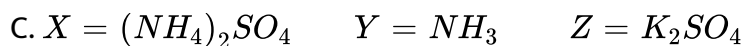
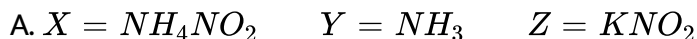
D. (P)-V,(Q)-IV, (R)-III,(S)-I,(T)-II

Answer: C

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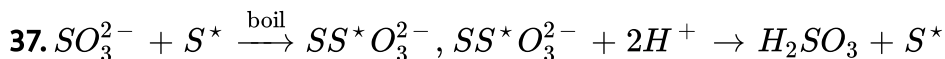


Identify (X) to (Z):



Answer: A

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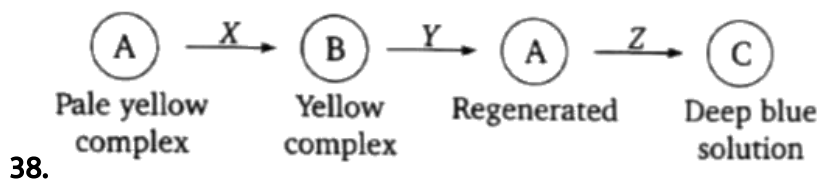
The above reaction sequence proves:

A. Two sulphur atoms of thiosulphate are not equivalent

- B. Both are equivalent
- C. Both of the above are correct
- D. None of these

Answer: A

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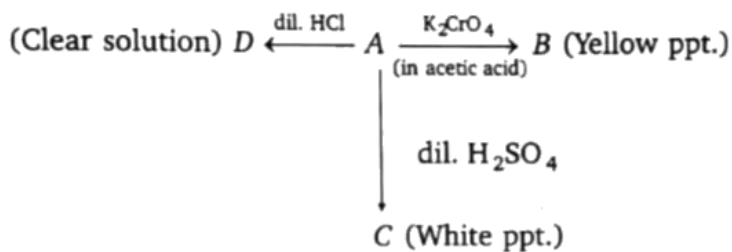


The sequential unknown reagents is/are:

- A. H_2O_2 /neutral medium, H_2O_2/H^+ , Cu^{2+} salt solution
- B. H_2O_2/H^+ , H_2O_2/OH^- , Fe^{3+} salt solution
- C. H_2O_2/OH^- , H_2O_2/H^+ , Co^{2+} salt solution
- D. H_2O_2 /neutral medium, H_2O_2/OH^- , Fe^{2+} salt solution

Answer: B

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39.

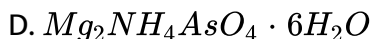
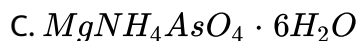
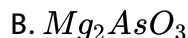
Compound(s) is/are:

- A. lead carbonate
- B. red lead
- C. barium carbonate
- D. calcium carbonate

Answer: C

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40. Which of the following is precipitated when an arsenate reacts with a magnesium mixture?



Answer: C



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41. A coloured solution known to contain two metal ions, was treated with excess cold sodium hydroxide solution. When filtered a whitish solid, slowly changing to brown, was retained on the filter paper and a colourless solution collected as the filtrate. Dropwise addition of hydrochloric acid to the filtrate produced a white ppt. which dissolved in excess acid. Treatment of the residue on filter paper with a solution of

strong oxidier produced a reddishh-violet solution.. indicate any pairs of ions:

A. Zn^{2+} and Mn^{2+} ions

B. Mg^{2+} and Zn^{2+} ions

C. Mn^{2+} and Mg^{2+} ions

D. Fe^{2+} and Zn^{2+} ions

Answer: A



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42. Which of the following statement is incorrect?

(I) In $S_2O_3^{2-}$ bothh sulphur are different in nature.

(II) Sodium acetate and lead acetate on heating giving same type of product. Whereas Mn, Sn, Fe oxalate salt giving different type of products.

(III) Aqueous solution OCl^- , S^{2-} and CO_3^{2-} basic in nature

(IV) NO_2^- oxidises I^- whereas Br_2 and Cl_2 oxidises NO_2^-

A. II only

B. II, III, IV

C. II, IV

D. I, II, IV

Answer: A



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43. On strongly heating, a blue salt leaves a black residue. Which of the following cations can be present in the salt?

A. Fe^{2+}

B. Fe^{3+}

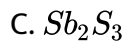
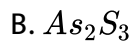
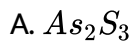
C. Cu^{2+}

D. Zn^{2+}

Answer: C

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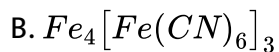
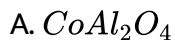
44. Which of the following, when dissolved in yellow ammonium sulphide, forms a thiocomplex containing the metal in the oxidation state +IV?

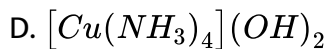
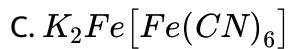


Answer: D

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45. Thenard's blue is





Answer: A



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46. A salt imparts a yellow colour to a borax bead in an oxidising flame.

What would be the colour of the bead in a reducing flame?

A. Green

B. Blue

C. Red

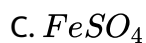
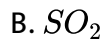
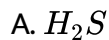
D. Violet

Answer: A



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47. $BiCl_3$ can be reduced to metallic bismuth by:

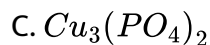
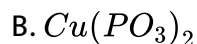


Answer: D



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48. The blue colour in an oxidising flame of a microcosmic bead containing Cu^{2+} is due to:

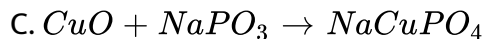
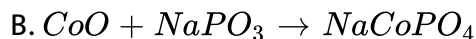
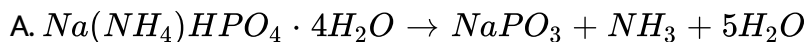


D. None of these

Answer: A

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49. Which of the following reaction(s) relevant to the microcosmic salt bead test?

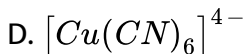
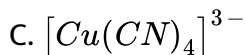
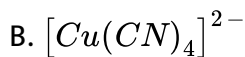
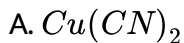


D. all of these

Answer: D

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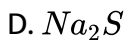
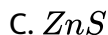
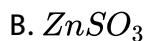
50. Which of the following is formed in solution when $[Cu(NH_3)_4]^{2+}$ is treated with KCN till the colour of the complex is discharged?



Answer: C

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51. A white solid forms Rinmann's green in the charcoal cavity test in an oxidising flame. On treatment with dilute H_2SO_4 , this solid produces a gas that turns an acidified dichromate paper green and lead acetate paper black. The white solid is:



Answer: C



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52. A white solid imparts a violet colour to a Bunsen flame. On being heated with concentrated H_2SO_4 , the solid gives violet vapours that turn starch paper blue. The salt may be :

A. NaI

B. KI

C. $CaBr_2$

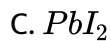
D. MgI_2

Answer: B



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53. Which of the following is soluble in boiling water, but less soluble in cold water?



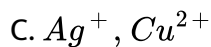
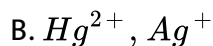
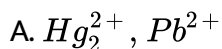
D. all of these

Answer: D



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54. Which of the following pairs of cations cannot be separated by using dilute HCl?



D. Hg_2^{2+} , Bi^{3+}

Answer: A

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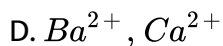
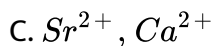
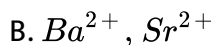
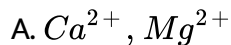
55. If NH_4OH in presence of NH_4Cl is added to a solution containing $Al_2(SO_4)_3$ and $MgSO_4$, which of the following will precipitate?

- A. $Al(OH)_3$ only
- B. $Mg(OH)_2$ only
- C. $Al(OH)_3$ and $Mg(OH)_2$
- D. None of these

Answer: A

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56. Which of the following pairs of cations can be separated by adding NH_4Cl , NH_4OH and then $(NH_4)_2CO_3$ to the mixture?



Answer: A



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57. H_2S is passed through the solution in an acidic medium to precipitate the sulphides of group II cations, but in an alkaline medium to precipitate the sulphides of group IV cations because:

A. the sulphides of group II cations are more soluble than those of group IV cations

- B. the sulphides of group II cations have lower solubility products than those of group IV cations
- C. the sulphides of group II cations are soluble in an acidic medium, but those of group IV cations are not
- D. The sulphides of group IV cations are soluble in an alkaline medium but those of group II cations are not

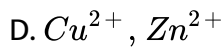
Answer: B



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58. Which of the following pairs of cations can be separated by passing H_2S through the mixture in the presence of 0.2 M HCl?

- A. Pb^{2+} , Cu^{2+}
- B. Ag^+ , Cu^{2+}
- C. Cd^{2+} , Bi^{3+}

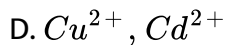
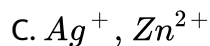
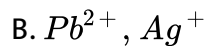
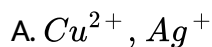


Answer: D



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59. Which of the following pairs of cations can be separated by using an NH_3 solution?



Answer: B



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60. Which of the following ions cannot be detected by the borax bead or microcosmic bead test?

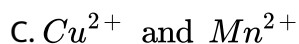


Answer: D



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61. Which of the following pairs of cations will turn borax beads blue in an oxidising flame?

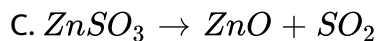
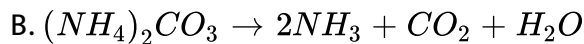
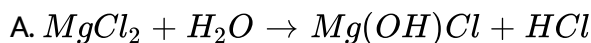


D. Cu^{2+} and Cr^{3+}

Answer: B

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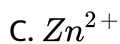
62. A colourless crystalline salt, on being heated, gives a coloured gas with a pungent smell. On being passed through an $AgNO_3$ solution, this gas forms a white precipitate insoluble in HNO_3 but readily soluble in an NH_3 solution. Which of the following reaction can lead to the above observation?



Answer: A

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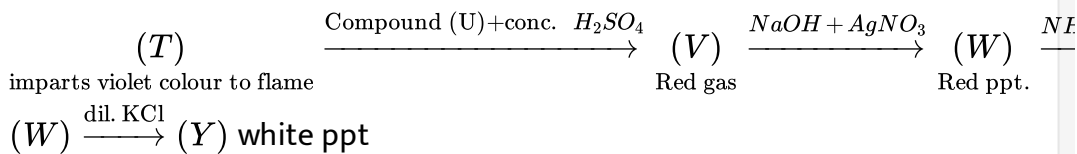
63. When NH_4Cl is not used together with NH_4OH in group-III reagent which of the following cation will not be precipitated?



Answer: D

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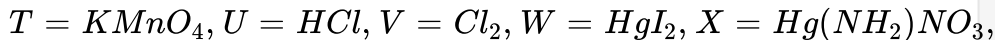
64.



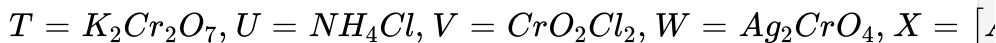
(U) $\xrightarrow[\Delta]{NaOH}$ (Z) gas (gives white fumes with HCl)

Identify (T) to (Z).

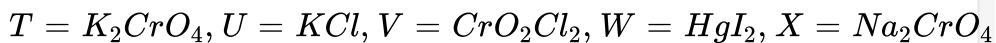
A.



B.



C.



D.



Answer: B



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65. In the separation of Cu^{2+} and Cd^{2+} of IInd group in qualitative analysis of cations, tetrammine copper (II) sulphate and tetrammine

cadmium (II) sulphate react with KCN to form the corresponding cyano complexes, which one of the following pairs of the complexes and their relative stability enables the separation of Cu^{2+} and Cd^{2+} ?

- A. $K_3[Cu(CN)_4]$ is perfect and $K_2[Cd(CN)_4]$ is imperfect complex
- B. $K_3[Cu(CN)_4]$ and $K_2[Cd(CN)_4]$ is perfect complex
- C. $K_2[Cu(CN)_4]$ imperfect and $K_2[Cd(CN)_4]$ perfect complex
- D. $K_3[Cu(CN)_4]$ imperfect and $K_2[Cd(CN)_4]$ is perfect complex

Answer: A



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

- A. 2M HCl
- B. 6M NH_3

C. 6M NaOH

D. H_2S gas

Answer: B

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67. When conc. H_2SO_4 was treated with $K_4[Fe(CN)_6]$, CO gas was evolved. By mistake, somebody used dilute H_2SO_4 instead of conc. H_2SO_4 then the gas evolved was

A. CO

B. HCN

C. N_2

D. CO_2

Answer: B

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68. Unknown salt 'A' + $K_2Cr_2O_7$ + conc. H_2SO_4 → Reddish brown fumes. Which is the correct statement regarding the above observation?

A. it confirms the presence of Cl^- ion

B. confirms the presence of Br^- ion

C. It confirms the presence of both

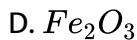
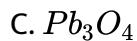
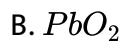
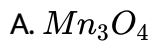
D. it neither confirms Cl^- nor Br^- unless it is passed through NaOH solution

Answer: D



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69. An inorganic red coloured compound (A) on heating gives a compound (B) and a gas (C). (A) on treatment with dil. HNO_3 gives compound (D), brown colour substance (E) and a neutral oxide (F). Compound (D) on warming gives off again gas (C). Then, (E) will be

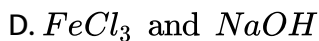
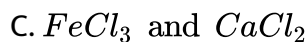
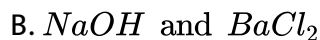
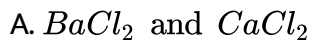


Answer: B



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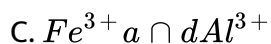
70. Which of the following reagents are used for the detection of acetate and oxalate ions respectively?



Answer: C

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71. Which of the following mixtures of ions can be separated by using an excess of an NaOH solution?



Answer: C

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72. A metal carbonate, on being heated strongly gives a solid that forms a green solid with CoO. In which analytical group will the cation be precipitate and what will be the colour of the precipitate ?

- A. Group I, white
- B. Group II, yellow
- C. Group III, white
- D. Group IV, white

Answer: D

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73. 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+} salt
- C. Cu^{2+}

D. Co^{2+}

Answer: B



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74. A white powder solid A forms a light green solution with water, which on treatment with potassium hexacyanoferrate (III) gives a blue precipitate. On being strongly heated, A leaves a brown residue and forms a mixture of two gaseous oxides, which turns a dichromate solution green and forms a white precipitate with a $BaCl_2$ solution containing concentrated HCl. A is:

A. $CuSO_4$

B. $Fe_2(SO_4)_3$

C. $FeSO_4$

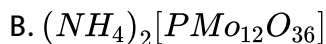
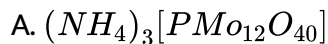
D. $Cr_2(SO_4)_3$

Answer: C



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75. Which of the following is the composition of the yellow precipitate obtained in the test for phosphates using ammonium molybdate?

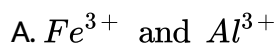


Answer: A



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76. Which of the following pairs of cations can be separated by using an NH_3 solution?



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

C. Sn^{2+} and Pb^{2+}

D. Cu^{2+} and Cd^{2+}

Answer: B



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LEVEL 3

1. A pale yellow inorganic compound K is insoluble in hot and dil. HNO_3 but dissolves in concentrated ammonia solution and compound L is formed, on treatment with dil. HNO_3 compound L produces a metal cation which gives white precipitate M with hypo solution. when an aqueous solution of (M) is boiled, a black precipitate of (N) is formed which dissolves in hot dil. HNO_3 and on adding HCl gives a white precipitate. when the compound (K) is heated with concentrated H_2SO_4 and MnO_2

brown fumes are observed.

Q. Compound (K) on heating with conc. H_2SO_4 and MnO_2 gives:



Answer: B

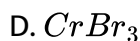
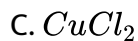
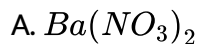


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2. A colourless inorganic compound (A) imparts a green colour to the flame. Its solution gives a white ppt. (B) with H_2SO_4 . When heated with $K_2Cr_2O_7$ and conc. H_2SO_4 , a brown red vapour/gas (C) is formed. The gas/ vapour when passed through aqueous NaOH solution, it turns into a yellow solution (D) which forms yellow precipitate (E) with CH_3COOH and $(CH_3COO)_2Pb$. with reference to above information, answer the

following questions.

Q. The colourless inorganic compound (A) is:



Answer: B

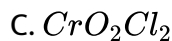


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3. A colourless inorganic compound (A) imparts a green colour to the flame. Its solution gives a white ppt. (B) with H_2SO_4 . When heated with $K_2Cr_2O_7$ and conc. H_2SO_4 , a brown red vapour/gas (C) is formed. The gas/ vapour when passed through aqueous NaOH solution, it turns into a yellow solution (D) which forms yellow precipitate (E) with CH_3COOH and $(CH_3COO)_2Pb$. with reference to above information, answer the

following questions.

Q. The liberated gas vapour (C) is:



Answer: C



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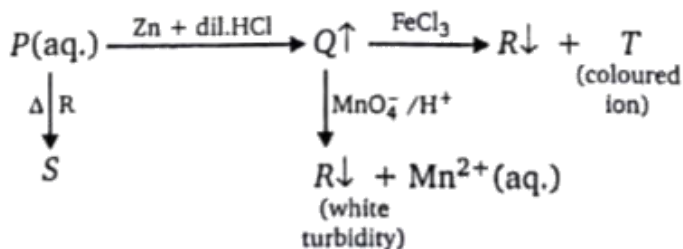
4. A colourless inorganic compound (A) imparts a green colour to the flame. Its solution gives a white ppt. (B) with H_2SO_4 . When heated with $K_2Cr_2O_7$ and conc. H_2SO_4 , a brown red vapour/gas (C) is formed. The gas/ vapour when passed through aqueous NaOH solution, it turns into a yellow solution (D) which forms yellow precipitate (E) with CH_3COOH and $(CH_3COO)_2Pb$. with reference to above information, answer the following questions.

Q. The yellow ppt. formed when (D) reacts with CH_3COOH and $(CH_2COO)_2Pb$ is:

- A. PbI_2
- B. $PbCrO_4$
- C. $BaCrO_4$
- D. $AgBr$

Answer: B

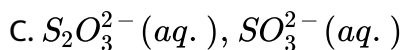
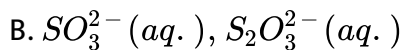
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5.

Q. Species P and S are respectively:

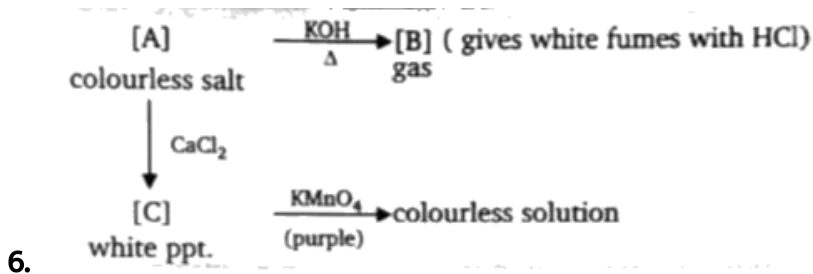
- A. $SO_3^-(aq.)$, S



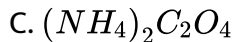
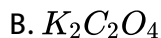
D. none of these

Answer: B

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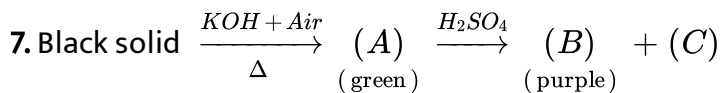


Q. The salt [A] is:



Answer: C

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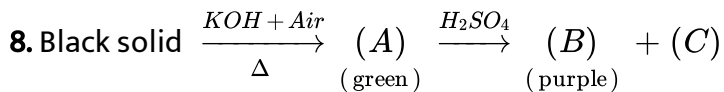


- (i) KI on reaction with alkali solution of (B) changes into a compound (D).
- (ii) The colour of the compound (B) disappears on treatment with the acidic solution of $FeSO_4$
- (iii) With cold conc. H_2SO_4 compound (B) gives (E), which being explosive decomposes to yield (F) and oxygen. It Brgt Q. Nature of compound (E) is:

- A. Acidic oxide
- B. Basic oxide
- C. Amphoteric oxide
- D. Neutral oxide

Answer: A

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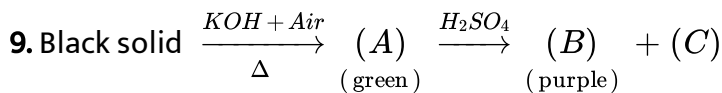
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- (ii) The colour of the compound (B) disappears on treatment with the acidic solution of $FeSO_4$
- (iii) With cold conc. H_2SO_4 compound (B) gives (E), which being explosive decomposes to yield (F) and oxygen. It Brgt Q. Colour of the solution obtained, when ferrous sulphate reacts with acidic solution of (B):

- A. Colourless
- B. Pink
- C. Green
- D. Yellow

Answer: D



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- (i) KI on reaction with alkali solution of (B) changes into a compound (D).
- (ii) The colour of the compound (B) disappears on treatment with the acidic solution of $FeSO_4$
- (iii) With cold conc. H_2SO_4 compound (B) gives (E), which being explosive decomposes to yield (F) and oxygen. It Brgt Q. Which of the following options is correct?

A. (C) and (F) are same compounds having same colour.

B. (C) and (F) are different compounds having same colour.

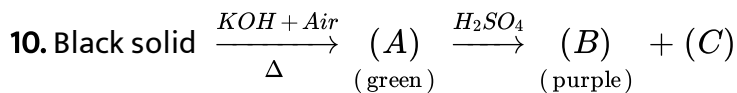
C. Compound (B) forms similar compound (E) with hot and conc. H_2SO_4 .

D. Compound (A) does not give same type of reaction in acidic and neutral medium

Answer: A



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- (i) KI on reaction with alkali solution of (B) changes into a compound (D).
- (ii) The colour of the compound (B) disappears on treatment with the acidic solution of $FeSO_4$
- (iii) With cold conc. H_2SO_4 compound (B) gives (E), which being explosive decomposes to yield (F) and oxygen. It Brgt Q. Type of hybridization in compound (D) is:

A. sp^2

B. sp^3

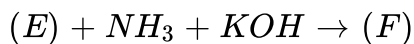
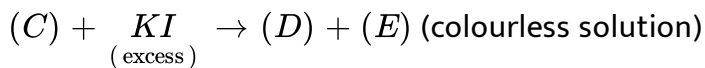
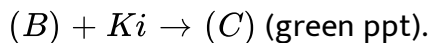
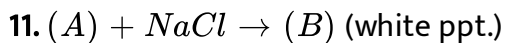
C. sp^3d

D. No hybridization

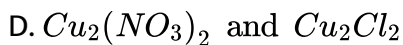
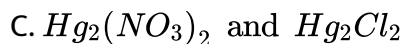
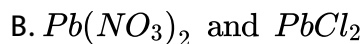
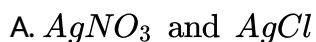
Answer: B



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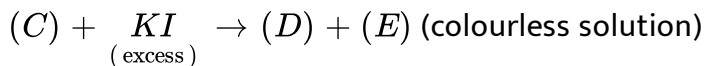
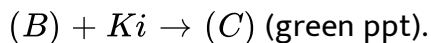
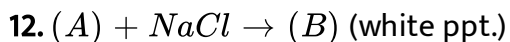
Q. Compounds (A) and (B) are respectively:

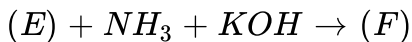


Answer: C



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Q. When compound (A) reacts with Na_2CrO_4 solution, the colour of the compound formed is

A. black

B. red

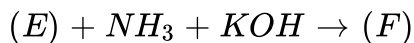
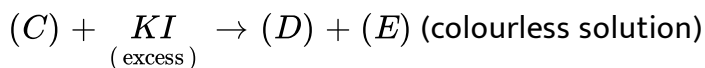
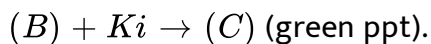
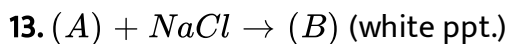
C. yellow

D. white

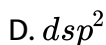
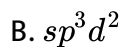
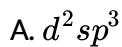
Answer: B



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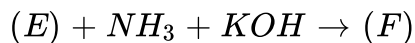
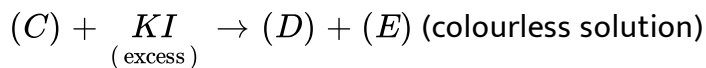
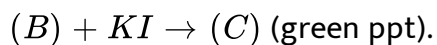
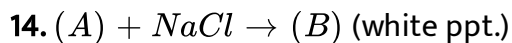


Q. Type of hybridization in compound (E) is:



Answer: C

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Q. Colour of the compound (F) is:

A. Yellow

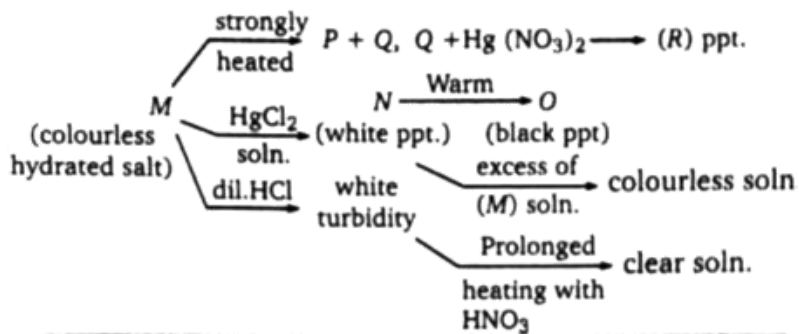
B. Blue

C. White

D. Brown

Answer: D

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Q. The colour of the compound R is:

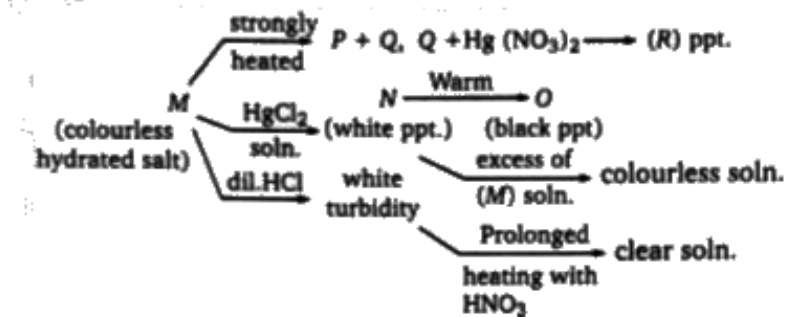
A. White

B. Yellow

C. Black

D. Brown

Answer: B

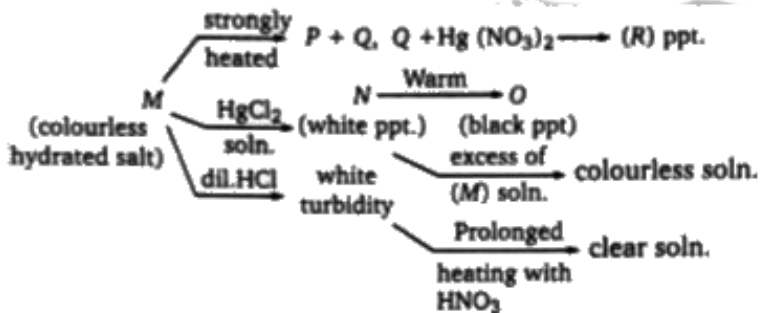


16.

Q. The structure of compound P is:

- A. Linear
- B. Crown shaped
- C. Square pyramidal
- D. Zig-zag chain

Answer: D



17.

Q. Compound M is used

(I) In photography

(II) in analytical chemistry

(III) as a hydrating agent

(IV) as an oxidizing as well as reducing agent

Choose the correct code:

A. I,III

B. I,II and III

C. I,II

D. I,II,III and IV

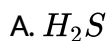
Answer: C



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18. A white crystalline solid 'A' on boiling with caustic soda solution gives a gas 'B', which on passing through an alkaline solution of potassium tetraiodomercurate (II) solution gives a brown ppt. the substance 'A' on heating evolves a neutral gas 'C', which is inert at room temperature and reactive a presence of catalyst and does not give brown fumes with nitric oxide.

Q. The gas 'B' is:



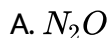
Answer: B



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19. A white crystalline solid 'A' on boiling with caustic soda solution gives a gas 'B', which on passing through an alkaline solution of potassium tetraiodomercurate (II) solution gives a brown ppt. the substance 'A' on heating evolves a neutral gas 'C', which is inert at room temperature and reactive in presence of catalyst and does not give brown fumes with nitric oxide.

Q. The gas 'C' is:



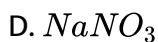
Answer: D



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20. A white crystalline solid 'A' on boiling with caustic soda solution gives a gas 'B', which on passing through an alkaline solution of potassium tetraiodomercurate (II) solution gives a brown ppt. the substance 'A' on heating evolves a neutral gas 'C', which is inert at room temperature and reactive a presence of catalyst and does not give brown fumes with nitric oxide.

Q. The substance 'A' is:



Answer: C



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21. A chemist opened a cupboard to find four bottles containing water solutions, each of which has lost its label. Bottles 1,2,3 contained colourless solutions, Whilst bottle 4 contained a blue solution. The labels from the bottles were lying scattered on the floor of the cupboard.

They were

copper (II) sulphate

sodium carbonate

lead nitrate

hydrochloric acid

By mixing samples of the contents of the bottles, in pairs, the chemist made the following observations:

(i) Bottle 1 + Bottle 2 white precipitate

(ii) Bottle 1 + bottle 3 white precipitate

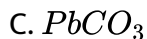
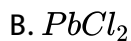
(iii) Bottle 1 + Bottle 4 white precipitate

(iv) Bottle 2 + Bottle 3 colourless gas evolved

(v) Bottle 2 + Bottle 4 no visible reaction

(vi) bottle 3 + bottle 4 blue precipitate

Q. Chemical formula of white precipitate in observation (i) is:



Answer: B



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22. A chemist opened a cupboard to find four bottles containing water solutions, each of which has lost its label. Bottles 1,2,3 contained colourless solutions, Whilst bottle 4 contained a blue solution. The labels from the bottles were lying scattered on the floor of the cupboard.

They were

copper (II) sulphate

sodium carbonate

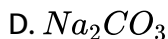
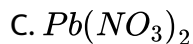
lead nitrate

hydrochloric acid

By mixing samples of the contents of the bottles, in pairs, the chemist made the following observations:

- (i) Bottle 1 + Bottle 2 white precipitate
- (ii) Bottle 1 + bottle 3 white precipitate
- (iii) Bottle 1 + Bottle 4 white precipitate
- (iv) Bottle 2 + Bottle 3 colourless gas evolved
- (v) Bottle 2 + Bottle 4 no visible reaction
- (vi) bottle 3 + bottle 4 blue precipitate

Q. Colourless solution present in bottle-1 is:



Answer: C



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23. A chemist opened a cupboard to find four bottles containing water solutions, each of which has lost its label. Bottles 1,2,3 contained colourless solutions, Whilst bottle 4 contained a blue solution. The labels from the bottles were lying scattered on the floor of the cupboard.

They were

copper (II) sulphate

sodium carbonate

lead nitrate

hydrochloric acid

By mixing samples of the contents of the bottles, in pairs, the chemist made the following observations:

(i) Bottle 1 + Bottle 2 white precipitate

(ii) Bottle 1 + bottle 3 white precipitate

(iii) Bottle 1 + Bottle 4 white precipitate

(iv) Bottle 2 + Bottle 3 colourless gas evolved

(v) Bottle 2 + Bottle 4 no visible reaction

(vi) bottle 3 + bottle 4 blue precipitate

Q. Nature of gas evolved in observation (iv) is:

A. Acidic

B. Neutral

C. Basic

D. Amphoteric

Answer: A



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24. A chemist opened a cupboard to find four bottles containing water solutions, each of which has lost its label. Bottles 1,2,3 contained colourless solutions, Whilst bottle 4 contained a blue solution. The labels from the bottles were lying scattered on the floor of the cupboard.

They were

copper (II) sulphate

sodium carbonate

lead nitrate

hydrochloric acid

By mixing samples of the contents of the bottles, in pairs, the chemist made the following observations:

- (i) Bottle 1 + Bottle 2 white precipitate
- (ii) Bottle 1 + bottle 3 white precipitate
- (iii) Bottle 1 + Bottle 4 white precipitate
- (iv) Bottle 2 + Bottle 3 colourless gas evolved
- (v) Bottle 2 + Bottle 4 no visible reaction
- (vi) bottle 3 + bottle 4 blue precipitate

Q. Chemical formula of white ppt. formed in observation (iii) is:

- A. $PbCl_2$
- B. $PbCO_3$
- C. $CuCO_3$
- D. $PbSO_4$

Answer: D



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25. 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 yellowish 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



View Text Solution

26. 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 yellowish 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 produced D and a colourless liquid
- C. there will be no reaction between them
- D. it yields B and an acidic oxide

Answer: B



View Text Solution

27. 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 yellowish 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 highly water soluble
- B. The molecule is linear
- C. Its aqueous solution acidic
- D. it turns starch iodate paper blue

Answer: B



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28. 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 yellowish 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 'fixing' 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

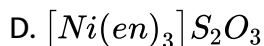
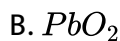
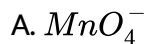
Answer: D



View Text Solution

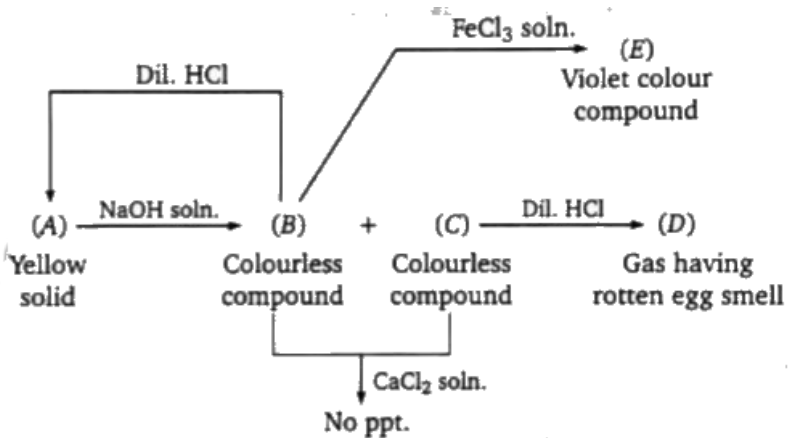
29. A coloured compound (A) reacts with dilute H_2SO_4 to produce a colourless gas (B) and colourless solution (C). The reaction between (B) and the acidified $K_2Cr_2O_7$ solution produces a green solution and a slightly yellowish precipitate (D). The substance (D) burns in air to produce a gas (E) 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 :



Answer: A

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Q. The structure of compound (A) is:

- A. Linear
- B. Crown shaped
- C. Square pyramidal
- D. Zig-zag chain

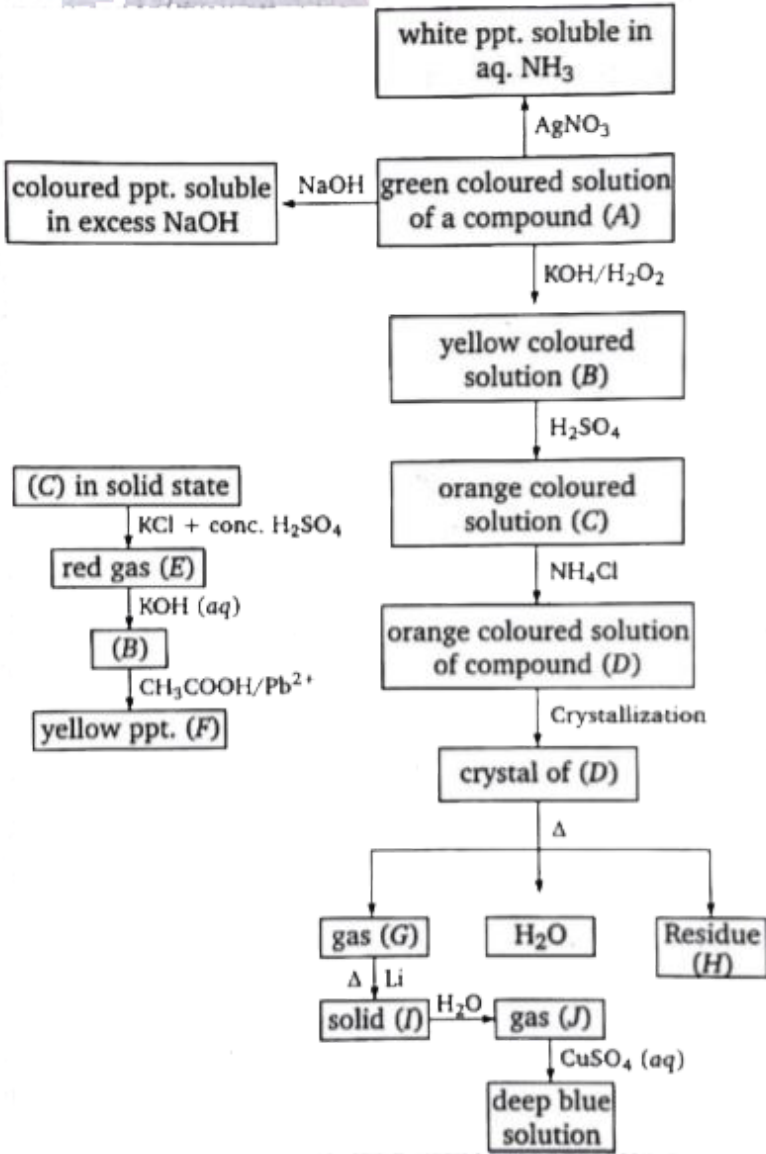
Answer: B



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31. Read the following short write up and answer subsequent questions based on observations(A) to (J).



Q. Compound A and B are respectively:

A. $FeCl_2, FeCl_3$

B. $CuCl_2 \cdot 2H_2O, [CuCl_4]^{2-}$

C. $CrCl_3$, K_2CrO_4

D. $NiCl_2$, $NiCl_3$

Answer: C



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32. An unknown mixture contains one or two of the following: $CaCO_3$, $BaCl_2$, $AgNO_3$, Na_2SO_4 , $ZnSO_4$ and $NaOH$. The mixture is completely soluble in water and solution gives pink colour with phenolphthalein. When dilute hydrochloric acid is gradually added to the solution, a precipitate is formed which dissolved with further addition of the acid.

Q. Which of the following combination of compounds is soluble in water?

A. $BaCl_2$ and $AgNO_3$

B. $AgNO_3$ and $NaOH$

C. $BaCl_2$ and Na_2SO_4

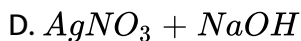
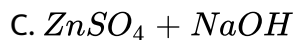
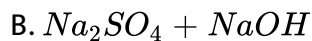
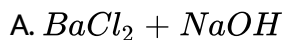
D. $ZnSO_4$ and excess $NaOH$

Answer: D

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33. An unknown mixture contains one or two of the following: $CaCO_3$, $BaCl_2$, $AgNO_3$, Na_2SO_4 , $ZnSO_4$ and $NaOH$. The mixture is completely soluble in water and solution gives pink colour with phenolphthalein. When dilute hydrochloric acid is gradually added to the solution, a precipitate is formed which dissolved with further addition of the acid.

Q. The aqueous solution of mixture gives white precipitate with dil. HCl which dissolves in excess of dil HCl . it confirms.



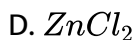
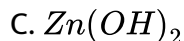
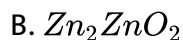
Answer: C



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34. An unknown mixture contains one or two of the following: $CaCO_3$, $BaCl_2$, $AgNO_3$, Na_2SO_4 , $ZnSO_4$ and $NaOH$. The mixture is completely soluble in water and solution gives pink colour with phenolphthalein. When dilute hydrochloric acid is gradually added to the solution, a precipitate is formed which dissolved with further addition of the acid.

Q. The white precipitate is



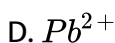
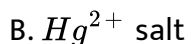
Answer: C





35. Aqueous solution of a salt 'A', when mixed with NaOH solution and warmed, a black precipitate is formed. Black ppt. is filtered and dissolved in dil. H_2SO_4 solution. The resulting solution gives a chocolate coloured precipitate with potassium ferrocyanide solution. the filtrate obtained after filtering off the black precipitate, upon warming with Zn and NaOH evolves a pungent smelling gas. the resulting solution also responds to the ring test. the filtrate does not evolve any gas when it is boiled with urea in the presence of H_2SO_4 .

Q. Salt 'A' consists of:



Answer: A



36. Aqueous solution of a salt 'A', when mixed with NaOH solution and warmed, a black precipitate is formed. Black ppt. is filtered and dissolved in dil. H_2SO_4 solution. The resulting solution gives a chocolate coloured precipitate with potassium ferrocyanide solution. the filtrate obtained after filtering off the black precipitate, upon warming with Zn and NaOH evolves a pungent smelling gas. the resulting solution also responds to the ring test. the filtrate does not evolve any gas when it is boiled with urea in the presence of H_2SO_4 .

Q. The filtrate obtained after filtering off the black precipitate consists of:



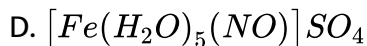
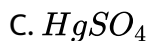
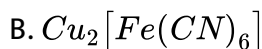
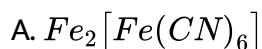
Answer: B



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37. Aqueous solution of a salt 'A', when mixed with NaOH solution and warmed, a black precipitate is formed. Black ppt. is filtered and dissolved in dil. H_2SO_4 solution. The resulting solution gives a chocolate coloured precipitate with potassium ferrocyanide solution. the filtrate obtained after filtering off the black precipitate, upon warming with Zn and NaOH evolves a pungent smelling gas. the resulting solution also responds to the ring test. the filtrate does not evolve any gas when it is boiled with urea in the presence of H_2SO_4 .

Q. The chocolate coloured precipitate is:



Answer: B

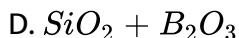
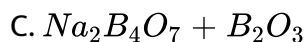
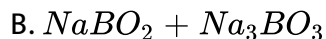
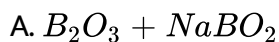


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38. Borax Bead Test is carried out when the original mixture is coloured. It is done with the help of a clean platinum wire on which a small loop is made at the end. When borax is heated on platinum wire loop transparent glass like bead is obtained. The hot bead is brought in contact with salt till it reacts with fused borax and colour is imparted to the bead. bead colour is noted.

Colour of the bead	Ion
1. Blue green	Cu^{2+}
2. Yellow	Fe^{3+}
3. Green	Cr^{3+}
4. Violet	Mn^{2+}
5. Dark blue	Co^{2+}
6. Brown	Ni^{2+}

Q. Glassy bead of :



Answer: A

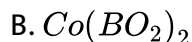
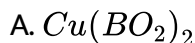


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Colour of the bead	Ion
1. Blue green	Cu^{2+}
2. Yellow	Fe^{3+}
3. Green	Cr^{3+}
4. Violet	Mn^{2+}
5. Dark blue	Co^{2+}
6. Brown	Ni^{2+}

Q. Blue bead can be of:



C. both (a) and (b)

D. None of these

Answer: C

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40. Borax Bead Test is carried out when the original mixture is coloured. It is done with the help of a clean platinum wire on which a small loop is made at the end. When borax is heated on platinum wire loop transparent glass like bead is obtained. The hot bead is brought in contact with salt till it reacts with fused borax and colour is imparted to the bead. bead colour is noted.

Colour of the bead	Ion
1. Blue green	Cu^{2+}
2. Yellow	Fe^{3+}
3. Green	Cr^{3+}
4. Violet	Mn^{2+}
5. Dark blue	Co^{2+}
6. Brown	Ni^{2+}

Q. The flame used in Borax Bead Test is:

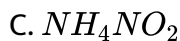
- A. Reducing
- B. Oxidising
- C. Both (a) and (b)
- D. Neither (a) nor (b)

Answer: C

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41. When a crystalline compound X is heated with $K_2Cr_2O_7$ and concentrated H_2SO_4 , a reddish brown gas A is evolved. On passing A into caustic soda, a yellow solution of B is formed. A yellow precipitate of C is obtained when a solution B is neutralised with acetic acid and then treated with a lead acetate solution. when X is heated with $NaOH$, a colourless gas is evolved which, when passed into a solution of $K_2[HgI_4]$, gives a reddish brown precipitate of D. It Brgt Q. Compound (X) is:

A. NH_4Br



Answer: B



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42. When a crystalline compound X is heated with $K_2Cr_2O_7$ and concentrated H_2SO_4 , a reddish brown gas A is evolved. On passing A into caustic soda, a yellow solution of B is formed. A yellow precipitate of C is obtained when a solution B is neutralised with acetic acid and then treated with a lead acetate solution. when X is heated with $NaOH$, a colourless gas is evolved which, when passed into a solution of $K_2[HgI_4]$, gives a reddish brown precipitate of D. ItBrgt Q. If the solution B is colourless, which of the following ions would not be present in the solid X?

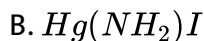


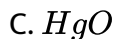


Answer: A

 [View Text Solution](#)

43. When a crystalline compound X is heated with $K_2Cr_2O_7$ and concentrated H_2SO_4 , a reddish brown gas A is evolved. On passing A into caustic soda, a yellow solution of B is formed. A yellow precipitate of C is obtained when a solution B is neutralised with acetic acid and then treated with a lead acetate solution. when X is heated with $NaOH$, a colourless gas is evolved which, when passed into a solution of $K_2[HgI_4]$, gives a reddish brown precipitate of D. It Brgt Q. Which of the following is the composition of the brown precipitate (D) ?





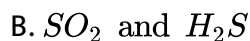
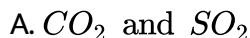
Answer: D



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44. A white solid A reacts with dilute H_2SO_4 to produce a colourless gas B and a colourless solution C. the reaction between B and acidified dichromate yields a green solution and a slightly coloured precipitate D. the substance D, when burnt in air, gives a gas E which reacts with B to yield D and a colourless liquid. anhydrous copper sulphate turns blue with this colourless liquid. the addition of aqueous NH_3 or $NaOH$ to C produces a precipitate that dissolves in an excess of the reagent to form a clear solution.

Q. Which of the following gases are B and E respectively?



C. H_2S and SO_2

D. CO_2 and H_2S

Answer: C



[View Text Solution](#)

45. A white solid A reacts with dilute H_2SO_4 to produce a colourless gas B and a colourless solution C. The reaction between B and acidified dichromate yields a green solution and a slightly coloured precipitate D. The substance D, when burnt in air, gives a gas E which reacts with B to yield D and a colourless liquid. Anhydrous copper sulphate turns blue with this colourless liquid. The addition of aqueous NH_3 or $NaOH$ to C produces a precipitate that dissolves in an excess of the reagent to form a clear solution.

Q. What would happen if the gas E were passed through an acidified $KMnO_4$ solution?

A. Bleaching of the permanganate solution without any precipitation

- B. Bleaching of the permanganate solution which would show a yellowish white turbidity
- C. Bleaching of the permanganate solution and the formation of a brown precipitate
- D. No action

Answer: A

 [View Text Solution](#)

46. A white solid A reacts with dilute H_2SO_4 to produce a colourless gas B and a colourless solution C. the reaction between B and acidified dichromate yields a green solution and a slightly coloured precipitate D. the substance D, when burnt in air, gives a gas E which reacts with B to yield D and a colourless liquid. anhydrous copper sulphate turns blue with this colourless liquid. the addition of aqueous NH_3 or $NaOH$ to C produces a precipitate that dissolves in an excess of the reagent to form a clear solution.

Q. What would appear if the gas B were passed through an aqueous solution of $Pb(NO_3)_2$?

- A. A white precipitate solution in hot dilute HNO_3
- B. A black precipitate soluble in hot dilute HNO_3
- C. A black precipitate insoluble in hot dilute HNO_3
- D. A yellow precipitate insoluble in hot concentrated HNO_3

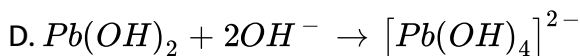
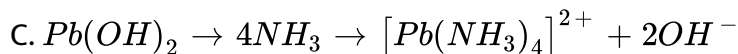
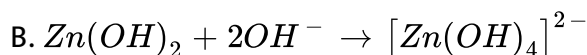
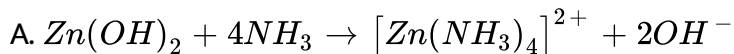
Answer: B

 [View Text Solution](#)

47. A white solid A reacts with dilute H_2SO_4 to produce a colourless gas B and a colourless solution C. the reaction between B and acidified dichromate yields a green solution and a slightly coloured precipitate D. the substance D, when burnt in air, gives a gas E which reacts with B to yield D and a colourless liquid. anhydrous copper sulphate turns blue with this colourless liquid. the addition of aqueous NH_3 or $NaOH$ to C produces a precipitate that dissolves in an excess of the reagent to form

a clear solution.

Q. Which of the following reactions are relevant to the action of NH_3 or $NaOH$ solution on C?



Answer: A::B



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48. A white solid A reacts with dilute H_2SO_4 to produce a colourless gas B and a colourless solution C. the reaction between B and acidified dichromate yields a green solution and a slightly coloured precipitate D. the substance D, when burnt in air, gives a gas E which reacts with B to yield D and a colourless liquid. anhydrous copper sulphate turns blue with this colourless liquid. the addition of aqueous NH_3 or $NaOH$ to C

produces a precipitate that dissolves in an excess of the reagent to form a clear solution.

Q. Suppose the solution obtained by the treatment of the solution C with an excess of NaOH is acidified with acetic acid and the gas B is passed through it. Which of the following will be obtained?

A. A colourless solution

B. A yellow precipitate

C. A black precipitate

D. A white precipitate

Answer: D



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

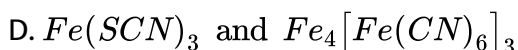
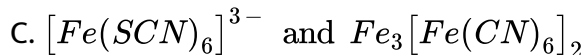
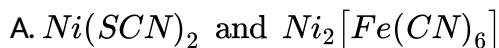
(ii) (A) on treatment with an excess of NH_4SCN gives a red coloured compound (B) and on treatment with a solution of $K_4[Fe(CN)_6]$ gives a

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.



Answer: D



Watch Video Solution

50. (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 $K_4[Fe(CN)_6]$ 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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51. (i) An aqueous solution of a compound A is acidic towards litmus and A sublimes at about $300^\circ C$

(ii) A solution of A, on treatment with an excess of NH_4SCN , gives a red compound, and on treatment with a solution of $K_4[Fe(CN)_6]$, gives a blue compound.

(iii) The solid A, on being heated with an excess of $K_2Cr_2O_7$ in the presence of concentrated H_2SO_4 , evolves deep red vapours of D.

(iv) On passing the vapours of D into a solution of NaOH and then adding the solution of acetic acid and lead acetate, a yellow precipitate of a compound E is obtained.

Q. Can compound A be prepared in the anhydrous form by strongly heating its hydrated crystals?

A. No, because the water molecules are very strongly bound in the hydrated crystals

B. No, because the salt gets hydrolysed in the process

C. Yes, because the water molecules are loosely bound in the hydrated crystals

D. Yes, because the salt sublimes at $300^{\circ}C$

Answer: B



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52. (i) A yellow precipitate of the compound A is formed on passing H_2S through a neutral solution of the salt B.

(ii) The compound A is soluble in hot dilute HNO_3 but insoluble in yellow ammonium sulphide.

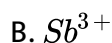
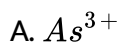
(iii) The solution of B, on treatment with a small quantity of NH_3 , gives a white precipitate soluble in an excess of the reagent, forming a compound C.

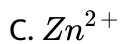
(iv). The solution of B gives a white precipitate with a small concentration of KCN. the precipitate is soluble in an excess of the reagent, forming a compound D.

(v) the solution of D, on treatment with H_2S , gives A.

(vi) The solution of B in dilute HCl, on treatment with a solution of $BaCl_2$, gives a white precipitate of the compound E, which is almost insoluble in concentrated HNO_3 .

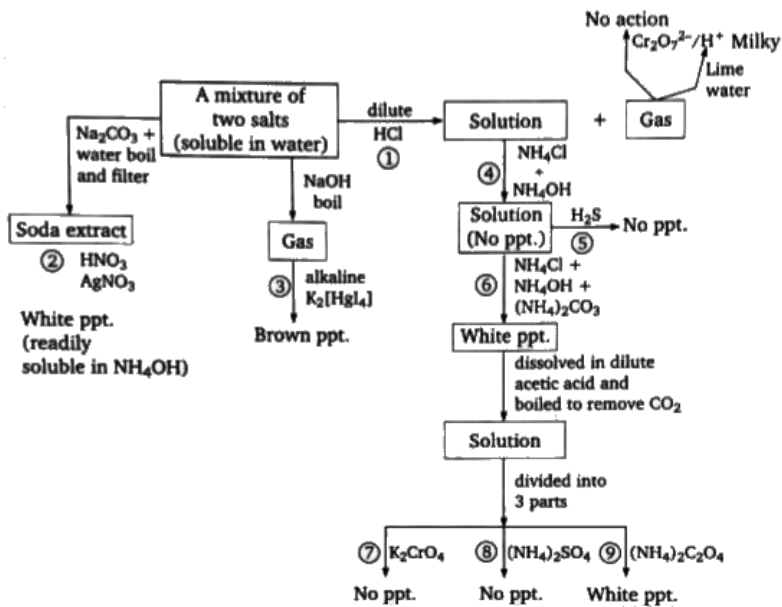
Q. Which of the following is the cation present in B?





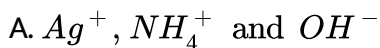
Answer: D

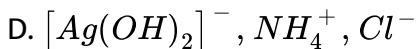
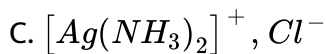
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53.

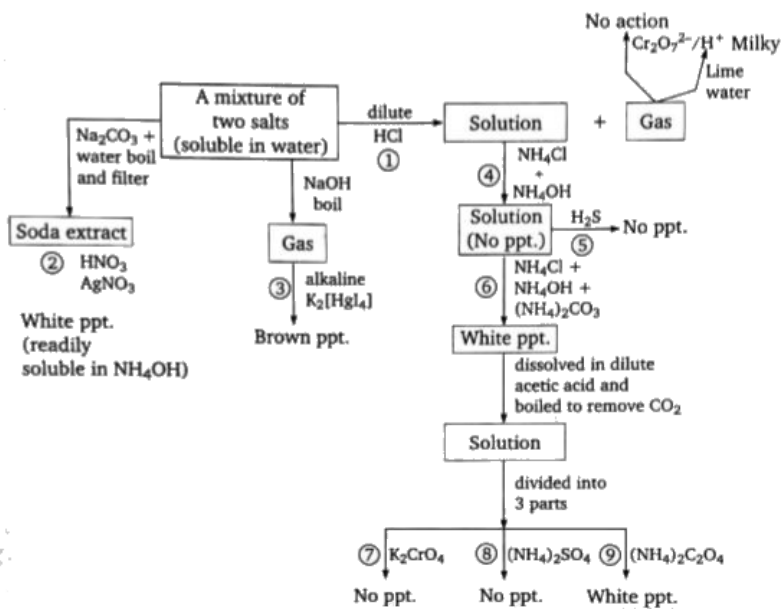
Q. The white precipitate obtained in step (2) when filtered, washed with water and dissolved in NH_4OH , furnishes the ions:





Answer: C

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54.

Q. What will happen if the white precipitate obtained in step (9) is treated

with a large volume of dilute H_2SO_4 and then with a few drops of a $KMnO_4$ solution?

- A. The precipitate will dissolve in dilute H_2SO_4 and the solution will decolorise the permanganate solution
- B. The precipitate will dissolve in dilute H_2SO_4 and the solution will give a brown precipitate with the $KMnO_4$ solution
- C. The precipitate will dissolve in dilute H_2SO_4 and the solution will not react with $KMnO_4$
- D. The precipitate will not dissolve in dilute H_2SO_4 and the mixture will not react with $KMnO_4$

Answer: A



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55. An aqueous solution of a white salt A gives a white precipitate B on treatment with dilute HCl in cold condition. B is soluble in boiling water.

An aqueous solution of A gives a yellow precipitate on treatment with a solution of K_2CrO_4 . The soda extract of A is acidified with dilute H_2SO_4 , boiled to remove CO_2 and treated with a freshly prepared solution of $FeSO_4$. Concentrated H_2SO_4 is added to the resulting solution. A brown ring is formed at the junction of the two layers.

Q. On treatment with a KI solution, an aqueous solution of A will give:

- A. a yellow precipitate, soluble in boiling water
- B. a yellow precipitate, insoluble in boiling water
- C. a white precipitate, soluble, soluble in boiling water
- D. a white precipitate, insoluble in boiling water

Answer: A



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56. An aqueous solution of a white salt A gives a white precipitate B on treatment with dilute HCl in cold condition. B is soluble in boiling water.

An aqueous solution of A gives a yellow precipitate on treatment with a

solution of K_2CrO_4 . The soda extract of A is acidified with dilute H_2SO_4 , boiled to remove CO_2 and treated with a freshly prepared solution of $FeSO_4$. Concentrated H_2SO_4 is added to the resulting solution. A brown ring is formed at the junction of the two layers.

Q. A solution of A, when treated with NH_3 , gives:

- A. a white precipitate soluble in an excess of NH_3
- B. a white precipitate insoluble in an excess of NH_3
- C. a grey precipitate soluble in an excess of NH_3
- D. a grey precipitate insoluble in an excess of NH_3

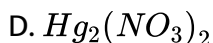
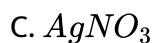
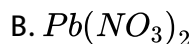
Answer: B

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57. An aqueous solution of a white salt A gives a white precipitate B on treatment with dilute HCl in cold condition. B is soluble in boiling water. An aqueous solution of A gives a yellow precipitate on treatment with a solution of K_2CrO_4 . The soda extract of A is acidified with dilute

H_2SO_4 , boiled to remove CO_2 and treated with a freshly prepared solution of $FeSO_4$. concentrated H_2SO_4 is added to the resulting solution. a brown ring is formed at the junction of the two layers.

Q. The salt A is:



Answer: B



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58. When an aqueous solution of a colourless mixture of two salts is treated with a drop of chlorine water, the solution becomes brown. Some chloroform is added to the brown solution and the resulting mixture is shaken well. The chloroform layer becomes violet.

(ii) When chlorine water is again added dropwise to the above mixture,

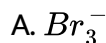
the chloroform layer becomes colourless.

(iii) On being heated with solid $K_2Cr_2O_7$ and concentrated H_2SO_4 , the solid mixture gives vapours of a dark colour which form a yellow solution with aqueous NaOH. On acidification with acetic acid followed by treatment with lead acetate, the yellow solution gives a yellow precipitate.

(iv) When boiled with an NaOH solution, the mixture gives a gas that produces thick white fumes with HCl vapours and turns nessler's reagent brown. the mixture does not respond to any other test for cations.

(v) The mixture, on being heated, gets completely sublimed.

Q. The brown solutin obtained in (i) is due to:



Answer: B



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59. When an aqueous solution of a colourless mixture of two salts is treated with a drop of chlorine water, the solution becomes brown. Some chloroform is added to the brown solution and the resulting mixture is shaken well. The chloroform layer becomes violet.

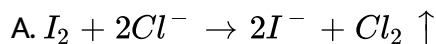
(ii) When chlorine water is again added dropwise to the above mixture, the chloroform layer becomes colourless.

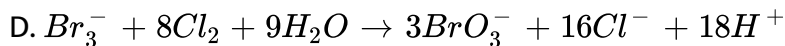
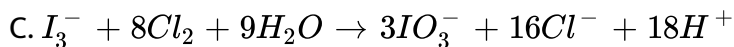
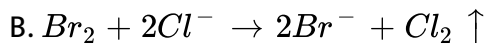
(iii) On being heated with solid $K_2Cr_2O_7$ and concentrated H_2SO_4 , the solid mixture gives vapours of a dark colour which form a yellow solution with aqueous NaOH. On acidification with acetic acid followed by treatment with lead acetate, the yellow solution gives a yellow precipitate.

(iv) When boiled with an NaOH solution, the mixture gives a gas that produces thick white fumes with HCl vapours and turns nessler's reagent brown. the mixture does not respond to any other test for cations.

(v) The mixture, on being heated, gets completely sublimed.

Q. Which of the following reactions takes place in (ii) ?





Answer: C



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60. (i) A white solid mixture of two salts containing a common cations in insoluble in water. It dissolves in dilute HCl producing some gases (with effervescence) that turn an acidified dichromate solution green. After the gases are passed through the acidified dichromate solution, the emerging gas turns baryta water milky.

(ii) On treatment with dilute HNO_3 , the white solid gives a solution which does not directly give a precipitate with a BaCl_2 solution but gives a white precipitate when warmed with H_2O_2 and then treated with a BaCl_2 solution.

(iii) The solution of the mixture in dilute HCl, when treated with

NH_4Cl , NH_4OH and an Na_2HPO_4 solution, gives a white precipitate.

Q. The gases evolved in (i) are:

A. CO_2 and HCl

B. SO_2 and CO_2

C. SO_2 and H_2S

D. NH_3 and CO_2

Answer: B



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61. (i) A white solid mixture of two salts containing a common cations in insoluble in water. It dissolves in dilute HCl producing some gases (with effervescence) that turn an acidified dichromate solution green. After the gases are passed through the acidified dichromate solution, the emerging gas turns baryta water milky.

(ii) On treatment with dilute HNO_3 , the white solid gives a solution which does not directly give a precipitate with a $BaCl_2$ solution but gives

a white precipitate when warmed with H_2O_2 and then treated with a $BaCl_2$ solution.

(iii) The solution of the mixture in dilute HCl, when treated with NH_4Cl , NH_4OH and an Na_2HPO_4 solution, gives a white precipitate.

Q. The white precipitate obtained in (ii) indicates the presence of a:

A. carbonate

B. sulphide

C. sulphite

D. chloride

Answer: C



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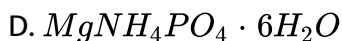
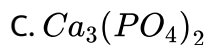
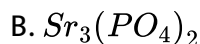
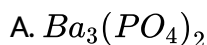
62. (i) A white solid mixture of two salts containing a common cations in insoluble in water. It dissolves in dilute HCl producing some gases (with effervescence) that turn an acidified dichromate solution green. After the gases are passed through the acidified dichromate solution, the

emerging gas turns baryta water milky.

(ii) On treatment with dilute HNO_3 , the white solid gives a solution which does not directly give a precipitate with a $BaCl_2$ solution but gives a white precipitate when warmed with H_2O_2 and then treated with a $BaCl_2$ solution.

(iii) The solution of the mixture in dilute HCl, when treated with NH_4Cl , NH_4OH and an Na_2HPO_4 solution, gives a white precipitate.

Q. The white precipitate obtained in (iii) consists of:



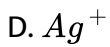
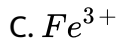
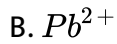
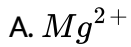
Answer: D



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ONE OR MORE ANSWER IS/ARE CORRECT

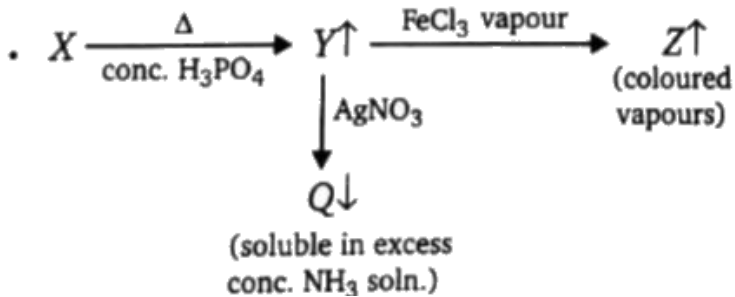
1. Basic radical(s) which can not be identified by borax bead test:



Answer: A::B::D



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Which of the following anion cannot be in X?



B. Cl^-

C. Br^-

D. I^-

Answer: A::D



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3. When ozone reacts with an excess of potassium iodide solution buffered with a borate buffer (pH 9.2) iodine is liberated which can be titrated against a standard solution of sodium thiosulphate, this is a quantitative method for estimating O_3 gas. when liberated I_2 and sodium thiosulphate will react, then product is/are:

A. $S_4O_6^{2-}$

B. SO_4^{2-}

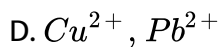
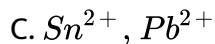
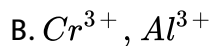
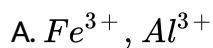
C. $S_2O_4^{2-}$

D. S

Answer: A

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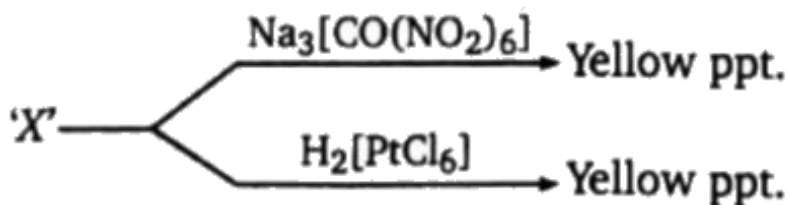
4. Which of the following pairs of cations cannot be separated by using a NaOH solution?



Answer: B::C

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5. Aqueous Solution of



the cation(s) present in 'X' is/are:



Answer: A::D

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6. Potassium chromate solution is added to an aqueous solution of a metal chloride. The precipitate thus obtained are insoluble in acetic acid.

These are subjected to flame test, the colour of the flame is

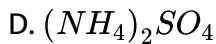
- A. Lilac
- B. Apple green
- C. Crimson red
- D. Blue

Answer: B::D

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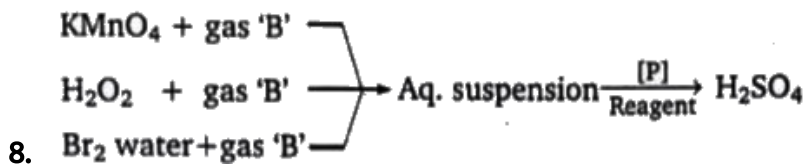
7. A white sublimable solid, when boiled with an NaOH solution, gives a colourless gas that turns nessler's reagent brown. The solid on being heated with solid $K_2Cr_2O_7$ and concentrated H_2SO_4 , gives red brown vapours. The white solid can be:

- A. NH_4I
- B. NH_4Br
- C. NH_4Cl



Answer: B::C

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Which of the following option(s) is/are correct regarding 'P' among the following?

A. O_3

B. Excess Cl_2 water

C. conc. HNO_3

D. HCl

Answer: A::C::D

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9. In which of the following case a violet colouration be observed?

A. An alkaline solution of sodium nitroprusside is treated with a solution of Na_2S

B. A solution of sodium cobaltinitrite is treated with one of KCl

C. A solution of $Mn(NO_3)_2$ is treated with sodium bismuthate or red lead in the presence of concentrated HNO_3

D. A solution of sodium nitroprusside in aqueous NaOH is treated with Na_2SO_3

Answer: A::C



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10. Saturated solution of SO_2 is heated at $150^\circ C$ in a closed container.

The product obtained is treated with $BaCl_2$ solution. What is/are the

observation (s)?

A. No ppt.

B. White turbidity

C. Evolution of SO_2

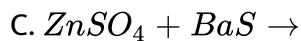
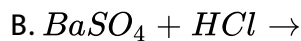
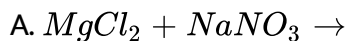
D. White ppt.

Answer: B::D



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11. Which reaction is/are possible?

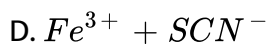
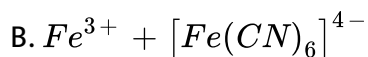
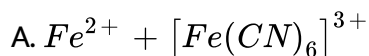


Answer: C::D



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12. Which of the following combinations in an aqueous medium will give a blue colour or precipitate ?



Answer: A::B::C



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

(a). Fe^{2+} 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^{3+} gives brown colour with potassium thiocyanate.

A. Fe^{2+} gives brown colour with potassium ferricyanide

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

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

D. Fe^{3+} gives brown colour with potassium thiocyanate

Answer: B::C



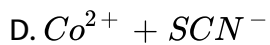
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14. Which of the following combinations in an aqueous medium will give a red colour or precipitate ?

A. $Fe^{3+} + SCN^{-}$

B. $Fe^{2+} + [Fe(CN)_6]^{3-}$

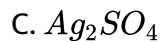
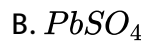
C. $Ni^{2+} + \text{dimethyloxime} + NH_3$ solution



Answer: A::C

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15. Which of the following sulphates are soluble in water?



Answer: A::C

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16. Which of the following pair(s) contain species, which react with each other on mixing their aqueous solutions to give yellow precipitate?

A. NaI and NaCl

B. NaCl and I_2

C. AgNO_3 and NaI

D. $\text{Pb}(\text{NO}_3)_2$ and NaI

Answer: C::D



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17. Which of the following sulphides dissolve in dilute HCl?

A. CoS

B. NiS

C. MnS

D. ZnS

Answer: C::D

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18. Acidic $K_2Cr_2O_7$ reacts with H_2S to produce:

A. Cr^{6+} ions

B. Cr^{3+} ions

C. SO_2

D. S

Answer: B::D

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19. Which of the following reagents can be used to distinguish between SO_2 and CO_2 ?

A. Lime water

B. $BaCl_2$ solution

C. H_2O_2 + $BaCl_2$ solution+dil. HCl

D. Acidified dichromate paper

Answer: C::D

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20. Which of the following will dissolve in a mixture of NaOH and H_2O_2 ?

A. $Fe(OH)_3$

B. $Cr(OH)_3$

C. $Al(OH)_3$

D. $Zn(OH)_2$

Answer: B::C::D

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21. Which of the following reagents will not be useful in separating a mixture of Zn^{2+} and Cu^{2+} ?

- A. H_2S in an acid medium
- B. H_2S in an alkaline method
- C. Excess of NaOH solution
- D. NH_3 solution

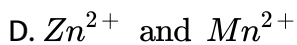
Answer: B::D



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22. Which of the following mixtures cannot be separated by passing H_2S through their solutions containing dilute HCl ?

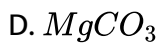
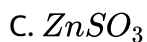
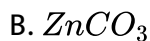
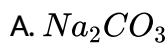
- A. Cu^{2+} and Sb^{3+}
- B. Pb^{2+} and Cd^{2+}



Answer: A::B::D

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23. Which of the following substance on being heated with give a gas that turns limewater milky?



Answer: B::C::D

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24. A white precipitate is obtained when:

- A. a solution of $BaCl_2$ is treated with Na_2SO_3
- B. a solution of $NaAlO_2$ is heated with NH_4Cl
- C. H_2S is passed through a solution of $ZnSO_4$
- D. a solution of $ZnSO_4$ is treated with Na_2CO_3

Answer: A::B::D



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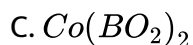
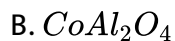
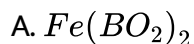
25. Which of the following cations will turn a borax bead green in an oxidising flame?

- A. Fe^{2+}
- B. Mn^{2+}
- C. Cr^{3+}
- D. Cu^{2+}

Answer: C

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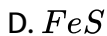
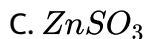
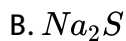
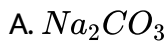
26. Which of the following substance are blue?



Answer: B::C::D

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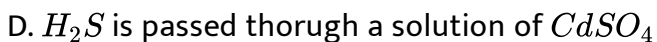
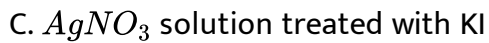
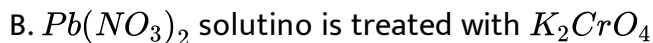
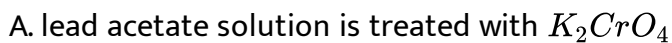
27. On reaction with dilute H_2SO_4 , which of the following salts will give out a gas that turns an acidified dichromate paper green?



Answer: B::C::D

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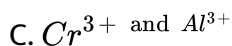
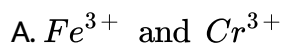
28. A yellow precipitate is obtained when:



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

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29. Which of the following ions can be separated by using NH_4Cl and NH_4OH ?

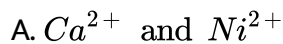


Answer: B::D



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30. Which of the following pairs of cations cannot be separated by adding NH_4Cl and NH_4OH to the mixture and then passing H_2S through it?



C. Ni^{2+} and Mn^{2+}

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

Answer: C::D

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31. Which of the following mixtures of ions in solution can be separated by using NH_3 solution?

A. Hg_2^{2+} and Ag^+

B. Bi^{3+} and Cu^{2+}

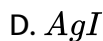
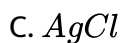
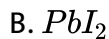
C. Ag^+ and Pb^{2+}

D. Cu^{2+} and Cd^{2+}

Answer: A::B::C

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32. Which of the following compound are coloured?



Answer: B::D



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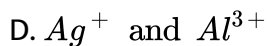
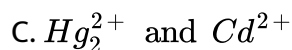
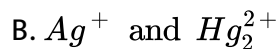
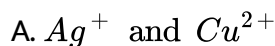
33. Which of the following mixtures of ions in solution can be separated by using NaOH solution?



Answer: A::D

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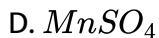
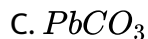
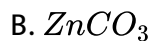
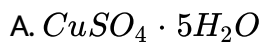
34. Which of the following ions can be separated by using dilute HCl?



Answer: A::C::D

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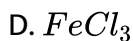
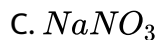
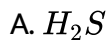
35. Which of the following substance will leave a black residue on strong heating?



Answer: A:D

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36. By which of the following reagents can a sublimate of $HgCl_2$ be distinguished from NH_4Cl ?



Answer: A

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37. An aqueous solution is prepared by dissolving a mixture containing $ZnCl_2$, $CdCl_2$ and $CuCl_2$. Now H_2S gas is passed through the aqueous solution of salt to form precipitate.

- A. CdS
- B. CuS
- C. ZnS
- D. No ppt.

Answer: A::B

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38. An aqueous solution containing S^{2-} ions will not give:

- A. Yellow precipitate with the suspension off $CdCO_3$ in water

- B. Black precipitate with lead acetate solution
- C. White precipitate with $BaCl_2$ solution
- D. Purple colour with sodium thiosulphate solution

Answer: C::D

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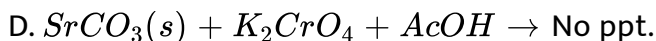
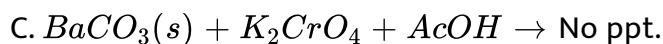
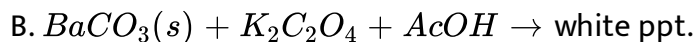
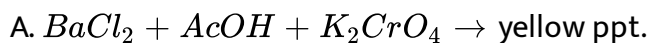
39. Which of the following statement (s) is (are) correct when a mixture of NaCl and $K_2Cr_2O_7$ is gently warmed with conc. H_2SO_4 ?

- A. A deep red vapour is evolved
- B. The vapour when passed into NaOH solution gives a yellow solution of Na_2CrO_4
- C. Chlorine gas is evolved
- D. Chromyl chloride is formed

Answer: A::B::D

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40. Choose the correct reaction:



Answer: A::D

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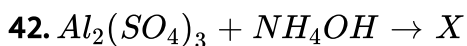
41. Which of the following aqueous solution of cation(s) give(s) white ppt. with NaOH and NH_4OH solution and formed ppt. is/are further completely dissolved in one of the excess reagent?





Answer: A::C

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Select the correct statement(s) about compound X:

A. X is a white coloured compound

B. X is insoluble in excess of NH_4OH

C. X is soluble in NaOH

D. X can be used as an antacid

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

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43. The evolution of a red-brown gas on heating a salt with $K_2Cr_2O_7$ and concentrated H_2SO_4 can arise from:

- A. chloride
- B. bromide
- C. nitrate
- D. nitrite

Answer: A::B



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MATCH THE COLUMN

**Column-I
(Reaction with Salt/Radical)**

- (A) Zn + dil. H_2SO_4
(B) dil. HCl
(C) NaOH (excess)
(D) KI

**Column-II
(Salt/Radical)**

- (P) $\text{Pb}(\text{NO}_2)_2$
(Q) $(\text{NH}_4)_2\text{S}$
(R) MnO_4^- (aq.)
(S) Hg_2^{2+} (aq.)
(T) Bi^{3+} (aq.)

1.



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2. Match the following columns

Column-I

- (A) Colourless gas evolved on addition of dil. H_2SO_4
(B) White ppt. on addition of AgNO_3
(C) Black ppt. obtained when HgCl_2 is added in little amount
(D) The ppt. obtained on addition of AgNO_3 followed by NH_3 solution

Column-II

- (P) $\text{S}_2\text{O}_3^{2-}$
(Q) S^{2-}
(R) NO_2^-
(S) CH_3CO_2^-



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3. Match the following columns

Column-I (Radicals)

- (A) Oxalate
(B) Acetate
(C) Sulphide
(D) Thiosulphate

Column-II (Test reagent)

- (P) Sodium nitroprusside
(Q) Conc. H_2SO_4
(R) Neutral FeCl_3
(S) Dil. H_2SO_4



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4. Match the following columns

Column-I	Column-II
(A) $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$	(P) Gives N_2O on heating
(B) FeSO_4	(Q) Gives CO_2 on heating
(C) $\text{Mg}(\text{HCO}_3)_2$	(R) Gives SO_2 and SO_3 on heating
(D) NH_4NO_3	(S) Gives N_2 on heating



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ASSERTION-REASON TYPE QUESTIONS

1. Assertion: AgNO_3 reacts with KCN to form white ppt. of AgCN . This white ppt. Disappears when excess KCN is added.

Reason: AgCN decomposes to form silver-carbide and evolve N_2 gas.

- A. If assertion is true but the reason is false
- B. If assertion is false but reason is true

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

D. If both assertion and reason are true but reason is not the correct explanation of assertion

Answer: A

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2. Assertion: $HgCl_2$ does not respond chromyl chloride test.

Reason: $HgCl_2$ being covalent compound ionises upto 2%.

A. If assertion is true but the reason is false

B. If assertion is false but reason is true

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

D. If oth assertion and reason are true but reason is not the correct explanation of assertion

Answer: C



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3. Assertion: $Zn + HNO_3(\text{conc.}) \rightarrow Zn(NO_3)_2 + NO_2 + H_2O$

Reason: Nitric acid plays double role in action of Zn metal, it acts as an acid as well as an oxidising agent.

A. If assertion is true but the reason is false

B. If assertion is false but reason is true

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

D. If oth assertion and reason are true but reason is not the correct explanation of assertion

Answer: C

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4. Assertion: If yellow precipitate is obtained on adding ammonium molybdate solution on boiling then phosphate radical is identified.

Reason: Ammonium phosphomolybdate is a yellow compound.

A. If assertion is true but the reason is false

B. If assertion is false but reason is true

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

D. If both assertion and reason are true but reason is not the correct explanation of assertion

Answer: B

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5. Assertion: $HgCl_2$ and $SnCl_2$ cannot exist together in an aqueous solution.

Reason: $SnCl_2$ is a strong reducing agent because Sn shows inert part effect.

A. If assertion is true but the reason is false

B. If assertion is false but reason is true

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

D. If oth assertion and reason are true but reason is not the correct explanation of assertion

Answer: A



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6. Assertion: Sometimes a white turbidity is obtained when a solution is prepared in water.

Reason: Pb^{2+} cations are precipitate as $PbCl_2$ which is sparingly solution in water.

A. If assertion is true but the reason is false

B. If assertion is false but reason is true

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

D. If oth assertion and reason are true but reason is not the correct explanation of assertion

Answer: D



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7. Assertion: CdS and As_2S_3 are yellow coloured compounds.

Reason: CdS and As_2S_3 can be separated by ammonium sulphide.

A. If assertion is true but the reason is false

B. If assertion is false but reason is true

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

D. If both assertion and reason are true but reason is not the correct explanation of assertion

Answer: D



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8. Assertion Green edge flame test tells presence of borate ion.

Reason: Green colour of the flame is due to burning of tri ethyl borate.

A. If assertion is true but the reason is false

B. If assertion is false but reason is true

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

D. If both assertion and reason are true but reason is not the correct explanation of assertion

Answer: C

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9. Assertion: A solution of AgCl in NH_4OH gives a white precipitate when acidified with HNO_3 .

Reason: $[\text{Ag}(\text{NH}_3)_2]^+$ decomposes in the presence of HNO_3 .

A. If assertion is true but the reason is false

B. If assertion is false but reason is true

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

D. If both assertion and reason are true but reason is not the correct explanation of assertion

Answer: C

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10. Assertion: When H_2S is passed through a solution containing $[Cu(CN)_4]^{2-}$ and $[Cd(CN)_4]^{2-}$ ions, only cadmium precipitates as CdS .

Reason: The oxidation state and coordination number of cadmium in $[Cd(CN)_4]^{2-}$ are II and 4 respectively.

- A. If assertion is true but the reason is false
- B. If assertion is false but the reason is true
- C. If both assertion and reason are true and reason is the correct explanation of assertion

D. If both assertion and reason are true but reason is not the correct explanation of assertion

Answer: D



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11. Assertion: concentrated solution of $BiCl_3$ can be hydrolysed with water.

Reason: $BiCl_3$ does not change in composition with dilution.

A. If assertion is true but the reason is false

B. If assertion is false but reason is true

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

D. If oth assertion and reason are true but reason is not the correct explanation of assertion

Answer: A

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12. Assertion: $Zn(OH)_2$ dissolves in an excess of NaOH solution as well as NH_4OH solution.

Reason: $Zn(OH)_2$ forms the soluble zincate salts with these alkalies.

- A. If assertion is true but the reason is false
- B. If assertion is false but reason is true
- C. If both assertion and reason are true and reason is the correct explanation of assertion
- D. If oth assertion and reason are true but reason is not the correct explanation of assertion

Answer: A

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13. Assertion: When a solution of Na_2ZnO_2 is acidified with dilute HCl and treated with H_2S , a precipitate of ZnS is formed.

Reason: Na_2ZnO_2 is decomposed by HCl to give Zn^{2+} ions.

- A. If assertion is true but the reason is false
- B. If assertion is false but reason is true
- C. If both assertion and reason are true and reason is the correct explanation of assertion
- D. If both assertion and reason are true but reason is not the correct explanation of assertion

Answer: B



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14. Assertion: Basic radical of V group are precipitated as their carbonates in presence of NH_4OH .

Reason: NH_4OH maintains the pH of the solution basic.

- A. If assertion is true but the reason is false
- B. If assertion is false but the reason is true
- C. If both assertion and reason are true and reason is the correct explanation of assertion
- D. If both assertion and reason are true but reason is not the correct explanation of assertion

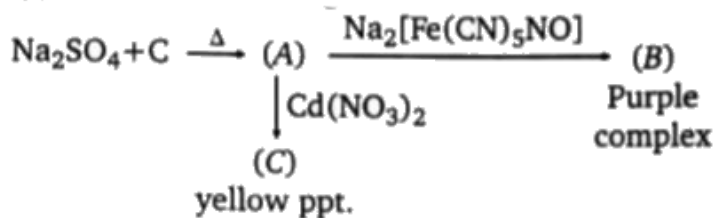
Answer: D



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SUBJECTIVE PROBLEMS

1. Consider the following reaction



Then calculate value of $|X^2 - Y^2|$ (where X and Y are total number of electrons present $t_{-}(2g)$ and $e_{-}(g)$ orbitals respectively in d-block metal ion of compound B).

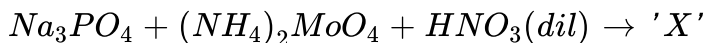
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2. Find number of basic radicals among the following cations, which can form soluble complex on adding excess of NH_4 solution.

$\text{Cd}^{2+}(\text{aq.})$, $\text{Pb}^{2+}(\text{aq.})$, $\text{Ni}^{2+}(\text{aq.})$, $\text{Mn}^{2+}(\text{aq.})$, $\text{Zn}^{2+}(\text{aq.})$, $\text{Ag}^{+}(\text{aq.})$, .

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3. Consider the following reaction

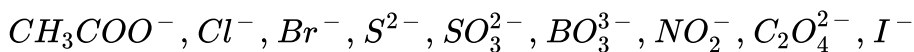


Then calculate total number of atoms of 15th group elements which are sp^3 hybridized in compound 'X'.

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4. How many anions will give colourless acid vapour/ gas with conc.

H_2SO_4 on reaction with following gives anions?



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