



CHEMISTRY

BOOKS - CENGAGE CHEMISTRY (HINGLISH)

QUALITATIVE INORGANIC SALT ANALYSIS

Illustration

1. a. $FeCl_3$ is yellow in aqueous solution but on passing H_2S gas, solution turns green Example.
- b. Aqueous solution of $K_2Cr_2O_7$, (orange) changes to yellow. Can you explain?
- c. Potassium permanganate is purple in colour. On adding KOH, it turns green. What is the compound formed?
- d. A metallic statue under acid-rain attack turns to bluish-green colour. What can be the probable metal and salt formed?

e. Oil painting turn blackish after some time, What is the salt formed?

Assume oil point contains Pb^{2+}

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2. Identify (A), (B) and (C)

$A + dil. H_2SO_4 \rightarrow$ brown colour vapour turning (KI + starch) paper blue

$A + NaOH \xrightarrow{\Delta} NH_3$ gas

(A) $\xrightarrow{\Delta}$ (B) (gas) + (C) (gas, but liquid at room temperature)

b. CO_2 and SO_2 both turn lime water milky how will you detect the presence if both are present in a mixture?

c. (A), $(M_2X \cdot 7H_2O)$ has water and M_2X (M is any divalent anion) in 1:1 ratio by weight $K_2Cr_2O_7$ solution green identify (A) and explain reaction

d. (A), (Black) + $dil. H_2SO_4 \rightarrow$ (B) (gas) + (C) (light green colour solution). Gas (B) turns lead acetate paper black. What are (A), (B) and (C)?

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3. a. Arrange AgF , $AgCl$, $AgBr$ and AgI in the increasing order of solubility in water

b. NO_2^\ominus interferes to the icing Test of NO_3^\ominus suggest a chemical method of removed burned with a blue flame initial but is put off uninstandy even as gas appear coming Example.

c. While testing oxalate, gas obtained burns with a blue flame intially but is put off instantly even as gas appears coming. Explain. d. I^\ominus also interfere in the 'Ring Test' of NO_3^\ominus suggest a chemical reagent that removed I^\ominus

e. Colourless of (A) $\xrightarrow{\Delta}$ (B) gas + (C) gas aquens solution of (c) turn rest litrman blue , aquerous solution of (A) and (B) also give while ppt , with $AgNO_3$ solution souble in aqueous solution of (C) identify (A) ,(B) and (C)

f. Can you defect Br^\ominus and I^\ominus by layer if present together ?



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4. a. (A) + $KBr \rightarrow$ yellow ppt. (B)

(A) + conc. $H_2SO_4 \xrightarrow{\Delta}$ brown vapours intensified with Cu-turnings.

(B) dissolves in lypo forming a soluble complex (C) what are (A),(B) and (C) and explain their reactions?

b. SO_3^{2-} and SO_4^{2-} both give white ppt with $BaCl_2$ solution. How is SO_3^{2-} detected in presence of SO_4^{2-} ?

c. $Na_2B_4O_7 \cdot 10H_2O + \text{conc. } H_2SO_4 \xrightarrow{\Delta} (A) \xrightarrow{CH_2OH \Delta} (B)$ identify (A) and (B)

d. (A) + $H_2SO_4 \xrightarrow{\Delta}$ gas (B)

Gas (B) turns $K_2Cr_2O_7/H^{\ominus}$ solution green. Aq. solution of (A) + $BaCl_2 \rightarrow$ white ppt. (C)

Filtrate after removing (C) + Br_2 water turns white ppt. Dissolve in ammonium acetate solution. Example.

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5. Colourless salt (A) $\xrightarrow{\text{dil. HCl}}$ White ppt. (B)

Colourless salt (A) $\xrightarrow{\text{dil. HCl}}$ White ppt. (B)

Soluble in H_2O

Soluble in hot water



(i) FeSO_4
(ii) conc. H_2SO_4



KI

Brown colour ring (D)

Yellow ppt. (C)

Identify (A),(B),(C) and (D)

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6. Identify (A),(B),(C) and (D) in the following :

Colourless salt (A) + conc. $\text{H}_2\text{SO}_4 \rightarrow$ brown fumes intensified on adding Cu turnings

Aqueous solution (A) + $\text{Cu} \rightarrow$ blue colour solution (B) and metal (C)

Aqueous solution (A) + $\text{HCl} \rightarrow$ white ppt soluble in aqueous NH_3 forming (D)

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7. Salt (A) makes part of electrode and is insoluble in water (A) is blackened by NH_3 forming (B), (B) is soluble in aqua regia forming (C), (C) gives orange ppt with KI but ppt dissolves in excess of KI forming (D), identify (A), (B), (C) and (D)

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8. If Cu^{2+} and Cd^{2+} both are present, it is difficult to outline a scheme to analyse in a mixture

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9. HgS is soluble in aqueous cyanide forming $Hg(CN)_2$. What happens if cyanuric acid is added to $Hg(CN)_2$?

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10. Identify (A),(B),(C),(D) and (E), (A) (black) $+ \text{dilHCl} \xrightarrow{\Delta}$ (B) (solution) + (C) (gas) (C) turns lead acetain paper black , (B) gives orange ppt (D) solution in excess of *KI* forming (E).

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11. Sometimes it happens that when H_2S gas is passed into solution in dii, *HCl* yellowish white turbidity appears .What do you conclude ? What preperation are takes to check this turbidity?

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12. IIB (arsenic group) sulphides are solution in *YAS* if cone *HCl* is added to this soluble portion colour red ppt are formed Write reaction

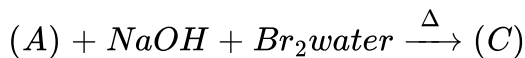
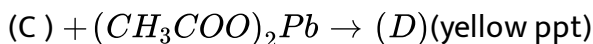
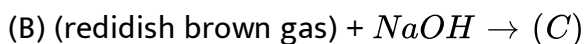
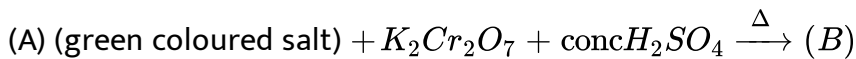
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13. Light green solution of (A) does not give blue coloured ppt . With $K_4[Fe(CN)_4]$ but on adding a drop of HNO_3 blue ppt .(B) appears .However (A) gives blue colour (C) with $K_4[Fe(CN)_6]$ Example the formation of (B) and (C) identify (A) if (A) also gives white ppt , with $AgNO_3$ solution



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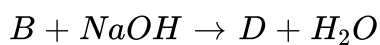
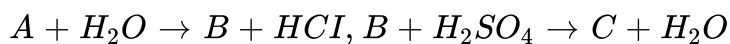
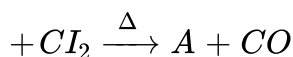
14. Identify (A),(B),(C) and (D) and example reactions .



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15. a. (A) (yellow coloured solution) changes to light green coloured solution (B) on passing H_2S gas (A) and (B) both give white ppt. with $BaCl_2$ solution, insoluble in conc. HCl (A) given blue coloured ppt (C) with $K_4[F_2(CN)_6]$ B does not .What are (A),(B) and (C)?

b. Identify A,B,C and D in the following reactions Bauxite + chemical



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16. (A) (colourless solution) gives white ppt (B) with $NaOH$ solution but ppt dissolves in excess of $NaOH$ forming (C) (C) does not give ppt with H_2S but on boiling with NH_4Cl while ppt (B) appears (A) also gives yellow ppt with $AgNO_3$ identify (A),(B) and (C)

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17. Test tube (A) contains aqueous zinc acetate solution while test tube (B) contains aqueous zinc chloride solution. What happens if H_2S gas is passed into each solution?

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18. Colourless solution of (A) gives white ppt (B) with $AgNO_3$ soluble in aqueous NH_3 (a) also while given ppt (C) with $NaOH$ soluble in excess of it forming (D), (D) gives ppt (E) with H_2S identify (A), (B), (C), (D) and (E).

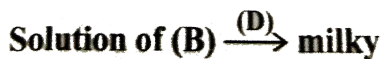
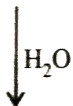
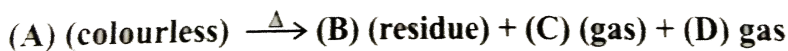
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19. $MCl_2 + K_2CrO_4 \rightarrow$ yellow ppt what can be MCl_2

a. If it is soluble in hot water?

b. If it gives green colour in flame?

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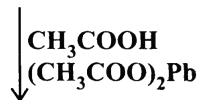
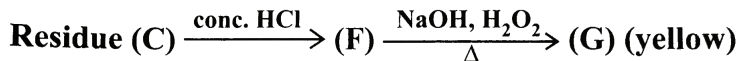
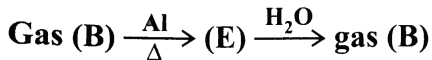
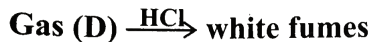
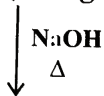
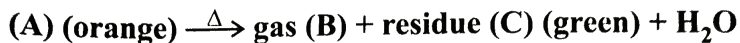
20.

(A) gives brick red colour in flame and decolourises MnO_4^- / H^+ , Gas (C) burns with blue flame. Identify (A), (B), (C) and (D),

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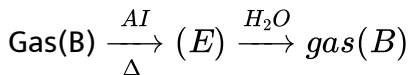
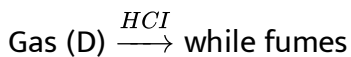
21. $CaSO_4$ is insoluble but is not precipitated when excess of $(NH_4)_2SO_4$ is added to $CaCl_2$ explain

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yellow (H)

22.

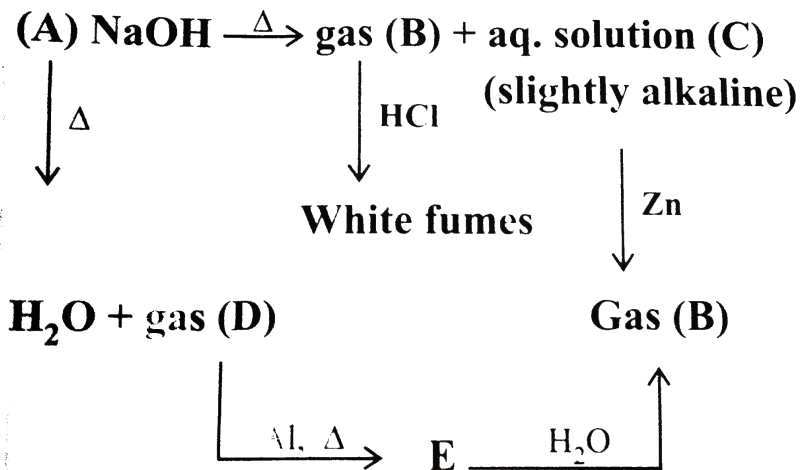


Identify (A) to (H) and explain reactions.



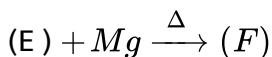
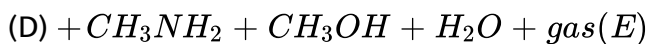
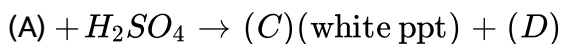
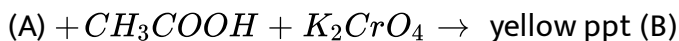
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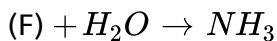
23. Identify (A),(B),(C),(D) and (E),



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24. Colourless salt (A) gives apple- green flame with cone. HCl (A) on reaction with dil H_2SO_4 give light brown flame (D) turning KI -strach paper blue.

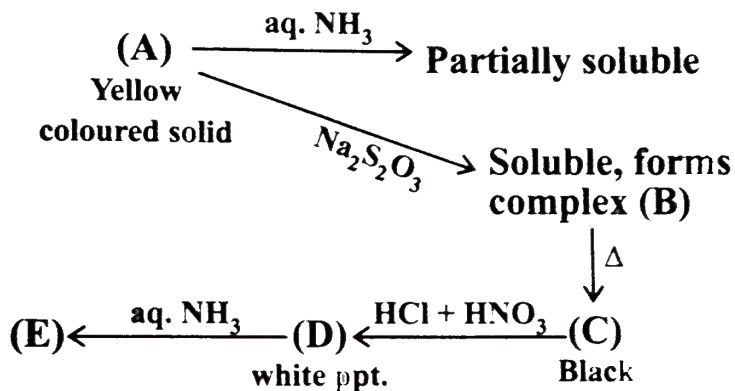




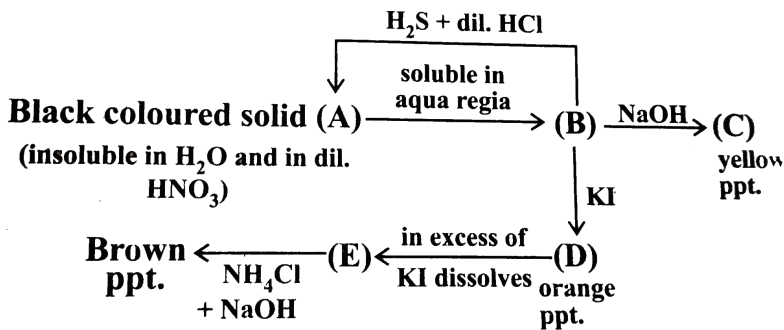
Identify (A) to (F) and explain reaction.

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Solved Example



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2.

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3. (A) as important laboratory reagent, turn red litmus blue imparts golden yellow colour in flame and is a gas precipitating agent, (A) reacts with Zn or Al forming H_2 gas (A) gives white ppt with $ZnCl_2$ or $AlCl_3$ but ppt. Dissolves in excess of (A), what is (A) and explain reaction

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4. Identify (A) based on the following facts:

a. (A) reduces $HgCl_2$ solution to white ppt changing to grey

b. (A) turns $FeCl_3$ yellow coloured solution to green

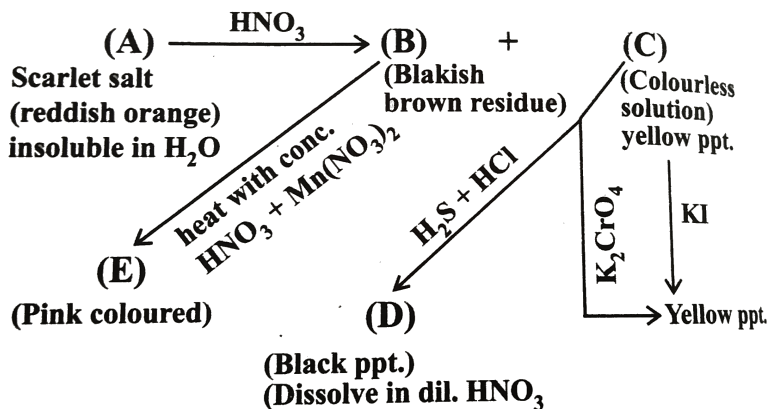
c. (A) gives while ppt $NaOH$ soluble in excess of $NaOH$

d. (A) gives yellow dirty ppt ,on passing H_2S gas in yellow ammonium sulphide (YAS)

e. (A) gives chromyl chloride test

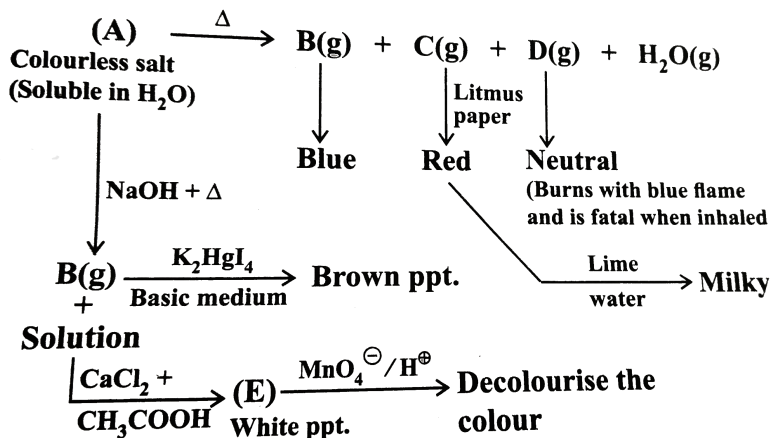
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5. Identify A to E



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6. Identify A to E



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7. Name one common reagent that can precipitate or react and differentiate following pairs:

a. Ag^\ominus and B^{2+} b. Cu^{2+} , Pb^{2+}

c. I^\ominus and Cl^\ominus d. I^\ominus and Br^\ominus

e. SO_3^{2-} and SO_4^{2-} i. Fe^{3+} , Cu^{2+}

g. Co^{2+} and Cu^{2+}

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8. What single reagent solution (including H_2O) could be used to effect the separation of the following of solids?

a. $NaOH$ and $Fe(OH)_3$

b. $Ni(OH)_2$ and $Fe(OH)_2$

c. Cr_2O_3 and $Fe(OH)_3$

d. MnS and CuS

e. $AgCl$ and AgI



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9. A solution may contain any of the following ions:

Fe^{2+} , Ni^{2+} , Cr^{3+} , Zn^{2+} , Mn^{2+} Based on the experiment and result

therein, which of the ions would be present? Indicate any wrong information if any....

a. The original solution is treated with with $(NH_4)_2S$ (a substitute is obtain

b. The ppt for (a) dissolves in regain

c. The filtrate after separation ppt in (a) is treated with $NaOH$ and H_2O_2 A

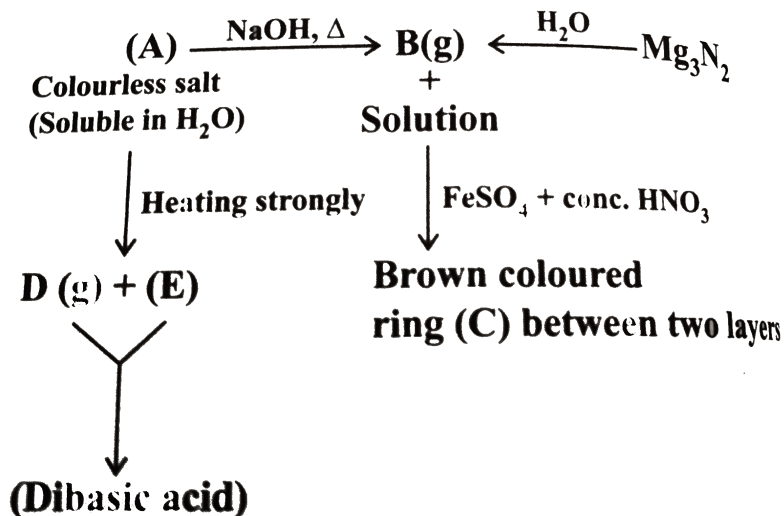
dark ppt, is separate filtrate is colourless.

e. The solution from (d) is turned with aq NH_3 . A dark ppt forms

f. The ppt from (e) is solution in HCl (aq) and solution develops an intense red colour when treated with SCN^\ominus (aq)

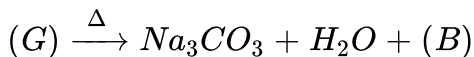
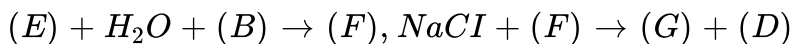
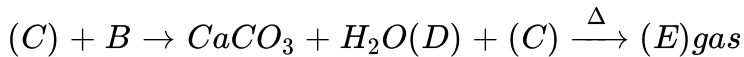
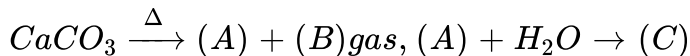
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10. Identify A to E



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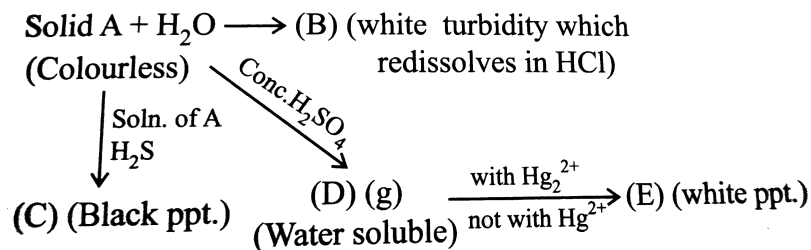
11. Identify (A) to (G) in the following scheme and name the process.



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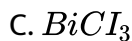
Exercises (Linked Comprehension)

1. Solid $A + H_2O \rightarrow (B)$ (white turbidity which redissolves in HCl)



Identify A

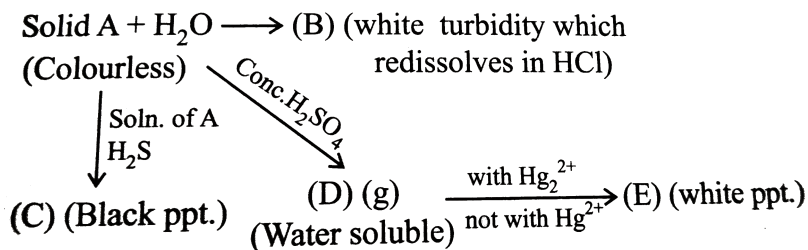
A. $BiOCl$



Answer: c

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2. Solid $A + H_2O \rightarrow (B)$ (while turbidity which redissolves in HCl)



Identify B

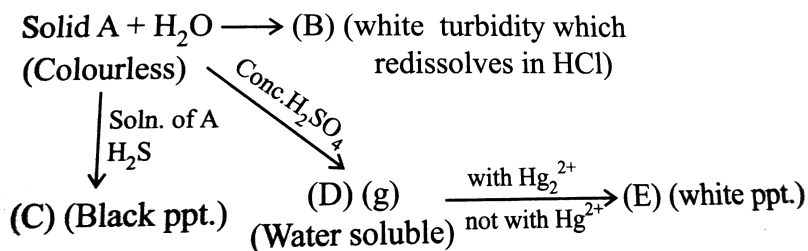


D. None of these

Answer: a

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3. Solid $A + H_2O \rightarrow (B)$ (white turbidity which dissolves in HCl)



Identify C

A. $BiOCl$

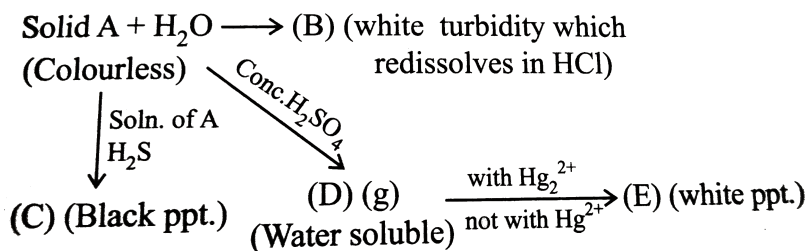
B. Bi_2S_3

C. $BiCl_3$

D. H_2S

Answer: b

4. Solid $A + H_2O \rightarrow (B)$ (while turbidity which redissolves in HCl)



Identify D

A. Br_2

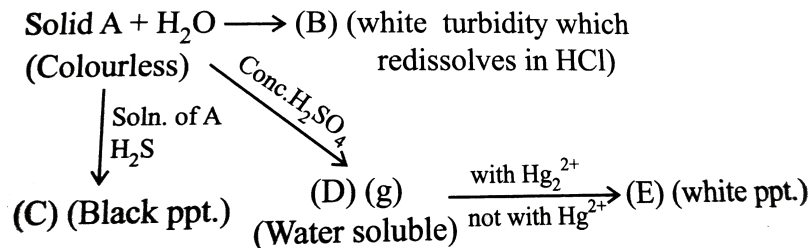
B. HCl

C. I_2

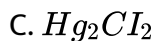
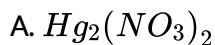
D. Cl_2

Answer: b

5. Solid $A + H_2O \rightarrow (B)$ (white turbidity which dissolves in HCl)



Identify E



Answer: c



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Greenish crystalline compounds (A) $\xrightarrow{\text{BaCl}_2 \text{ Soln.}}$ (B) (white ppt. insoluble in dil. HCl)



$C_{(g)} + D_{(g)} + H_2O_{(g)} + E$ (Red brown residue)

\downarrow Conc. HCl, ppt. dissolves

G (yellow white ppt.) $\xleftarrow{H_2S}$ F (yellow solution) $\xrightarrow{K_4[Fe(CN)_6]}$ Blue ppt.

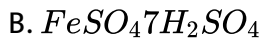


Green soln.



6. H (Greenish filtrate)

Identify compound A



Answer: b



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Greenish crystalline] $\xrightarrow{\text{BaCl}_2 \text{ Soln.}}$ (B) (white ppt. insoluble
compounds (A) in dil. HCl



$\text{C}_{(g)} + \text{D}_{(g)} + \text{H}_2\text{O}_{(g)} + \text{E}$ (Red brown residue)

\downarrow Conc. HCl, ppt. dissolves

G (yellow $\xleftarrow{\text{H}_2\text{S}}$ F (yellow solution) $\xrightarrow{\text{K}_4[\text{Fe}(\text{CN})_6]}$ Blue ppt.

white ppt.)

$\downarrow \text{SnCl}_2$

Green soln.

\downarrow Filter

7. H (Greenish filtrate)

Gases C and D are

A. SO_2, SO_3

B. SO_3, CO_2

C. NO_2, MgO

D. ZnO, SO_3

Answer: a



View Text Solution

Greenish crystalline] $\xrightarrow{\text{BaCl}_2 \text{ Soln.}}$ (B) (white ppt. insoluble
compounds (A) in dil. HCl



$C_{(g)} + D_{(g)} + H_2O_{(g)} + E$ (Red brown residue)

\downarrow Conc. HCl, ppt. dissolves

G (yellow white ppt.) $\xleftarrow{H_2S}$ F (yellow solution) $\xrightarrow{K_4[Fe(CN)_6]}$ Blue ppt.



Green soln.



8. H (Greenish filtrate)

Identify yellow solution F

A. Fe_2O_3

B. $FeCl_2$

C. $ZnCl_2$

D. $CuCl$

Answer: b



View Text Solution

Greenish crystalline compounds (A) $\xrightarrow{\text{BaCl}_2 \text{ Soln.}}$ (B) (white ppt. insoluble in dil. HCl)



$C_{(g)} + D_{(g)} + H_2O_{(g)} + E$ (Red brown residue)

\downarrow Conc. HCl, ppt. dissolves

G (yellow white ppt.) $\xleftarrow{H_2S}$ F (yellow solution) $\xrightarrow{K_4[Fe(CN)_6]}$ Blue ppt.

$\downarrow SnCl_2$
Green soln.

\downarrow Filter

9. H (Greenish filtrate)

Identify G

A. SiO_2

B. ZnS

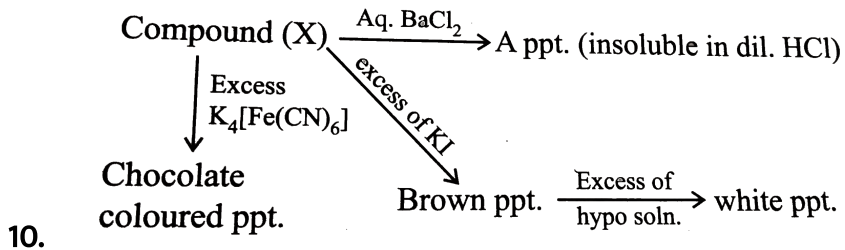
C. S

D. FeS

Answer: c



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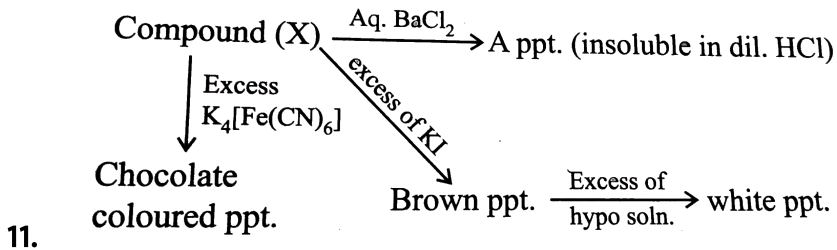
Identify X



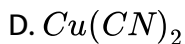
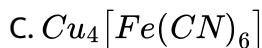
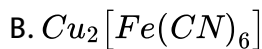
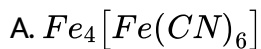
Answer: a



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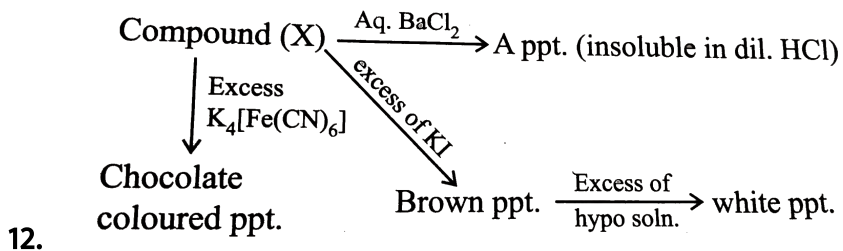
What is the formula of chocolate coloured ppt ?



Answer: b



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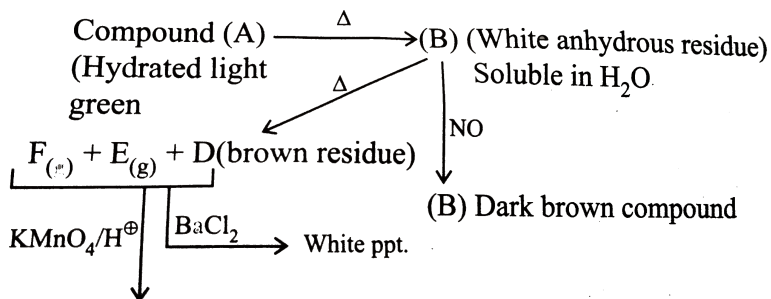
What is the formula of brown ppt ?

- A. Cu_2I_2
- B. $\text{Cu}_2\text{I}_2 + \text{I}_3^\ominus$
- C. CuI_2
- D. CuSO_4

Answer: b

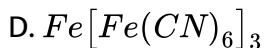
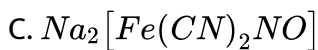
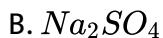
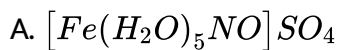


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13. Pink colour of $KMnO_4$ is discharged

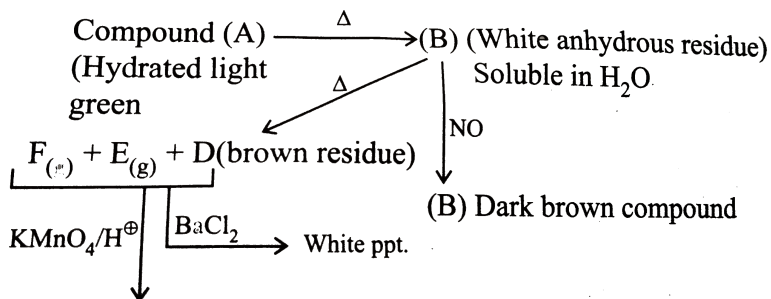
Identify C



Answer: a

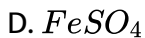
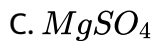
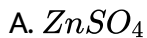


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14. Pink colour of $KMnO_4$ is discharged

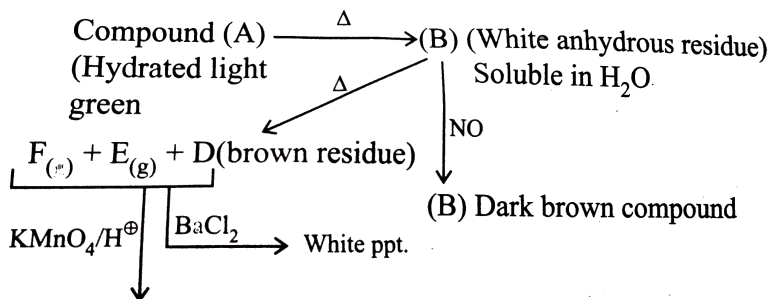
Identify B



Answer: d



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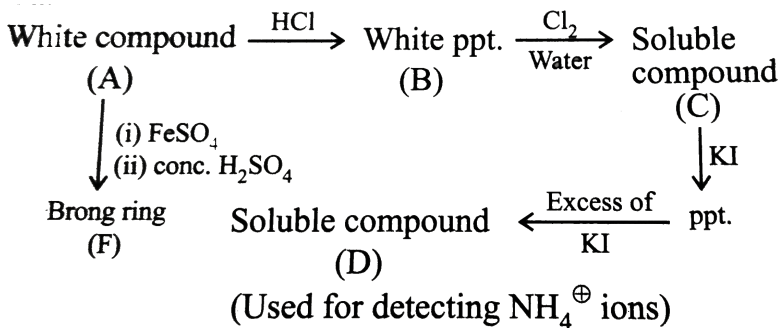
15. Pink colour of $KMnO_4$ is discharged

Identify D

- A. ZnO
- B. FeO
- C. Fe_2O_3
- D. CuO

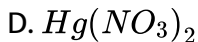
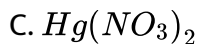
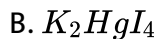
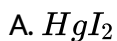
Answer: c

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16.

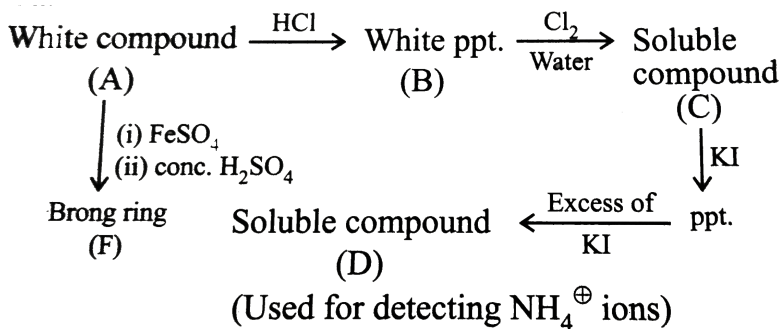
Compound (A) is



Answer: d



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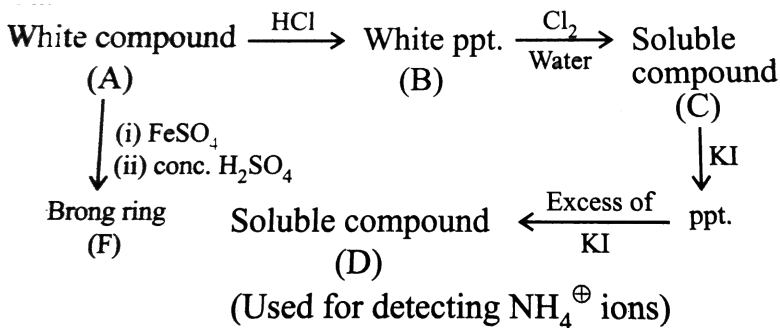
17.

Oxidation state of Fe in compound (F) is

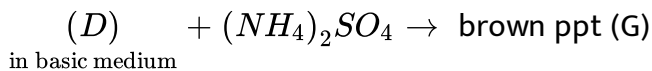
- A. +1
- B. +2
- C. +3
- D. +4

Answer: a

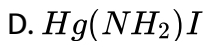
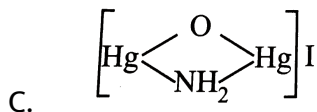
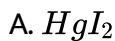
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18.



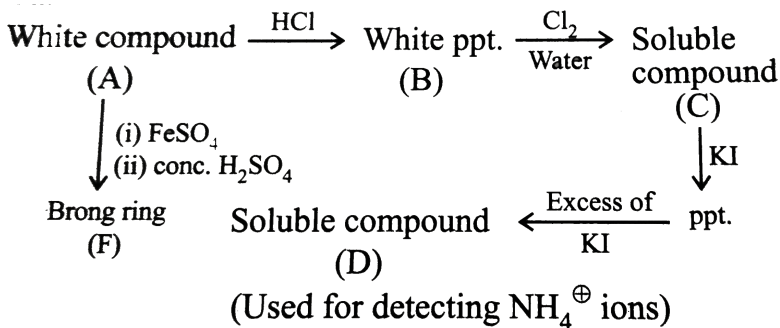
Hence, compound(G) is



Answer: c



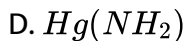
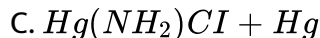
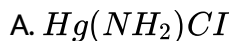
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19.

What ppt (B) + $\text{NH}_3 \rightarrow$ Black ppt. (H).

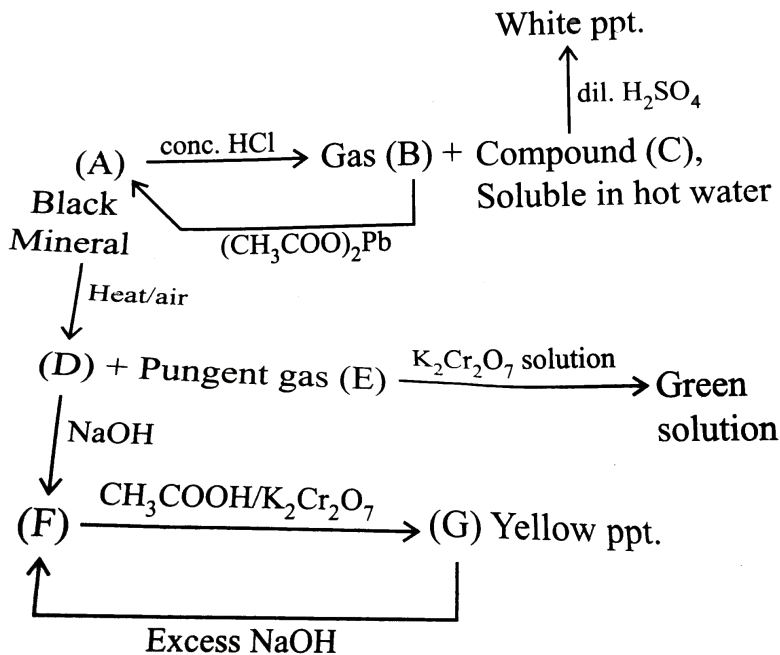
Hence, (H) is due to the formula of



Answer: c



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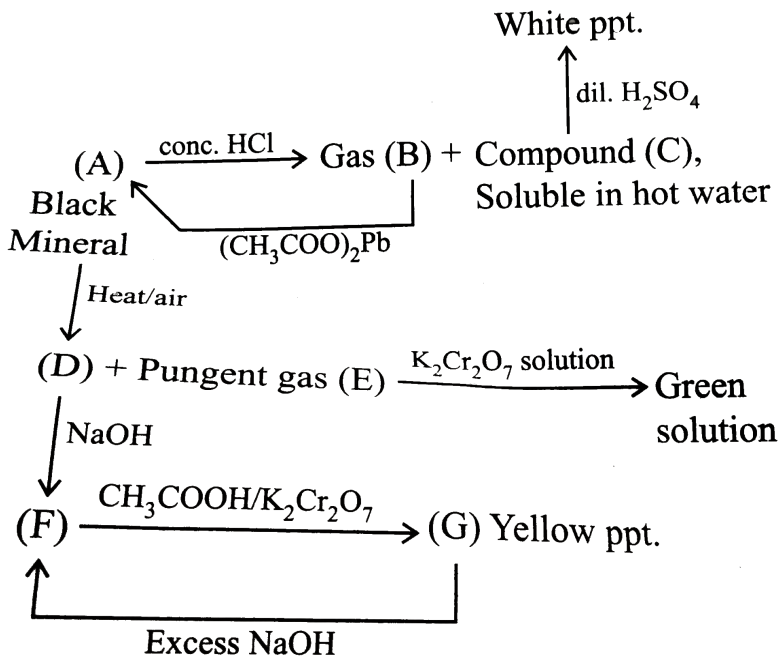
20.

Gas (B) on passing through $CaSO_4$ solution will give

- A. Black ppt
- B. yellow ppt
- C. orange ppt
- D. No ppt

Answer: b

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21.

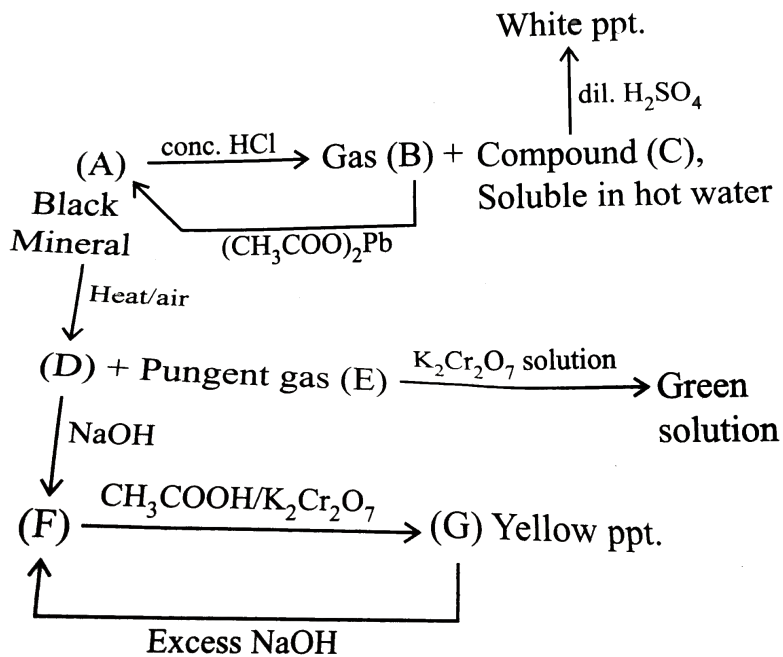
Compound (A),(B) and(E) are respectively

- A. $\text{CuS}, \text{H}_2\text{S}, \text{SO}_2$
- B. $\text{PbS}, \text{H}_2\text{S}, \text{SO}_2$
- C. $\text{PbS}, \text{H}_2\text{S}, \text{SO}_3$
- D. $\text{ZnS}, \text{H}_2\text{S}, \text{SO}_2$

Answer: b



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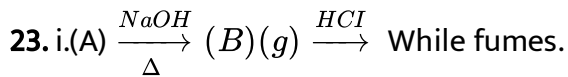


22.

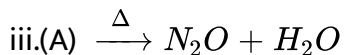
Compound (C) and (D) are respectively

- A. PbO , PbCl_2
- B. PbCl_2 , PbCl_2
- C. PbO , PbO_2
- D. PbS , PbO

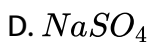
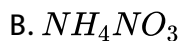
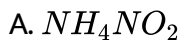
Answer: b



ii. After (B) is expelled completely, resultant alkline solution again gives gas (B) on heating with zine



Identify A



Answer: b

24. i.(A) $\xrightarrow[\Delta]{NaOH}$ (B)(g) \xrightarrow{HCl} While fumes.

ii. After (B) is expelled completely, resultant alkali solution again gives gas (B) on heating with zinc

iii.(A) $\xrightarrow{\Delta} N_2O + H_2O$

Identify B

A. SO_2

B. NH_3

C. N_2O

D. NO_2

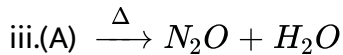
Answer: b



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25. i.(A) $\xrightarrow[\Delta]{NaOH}$ (B)(g) \xrightarrow{HCl} While fumes.

ii. After (B) is expelled completely, resultant alkali solution again gives gas (B) on heating with zinc

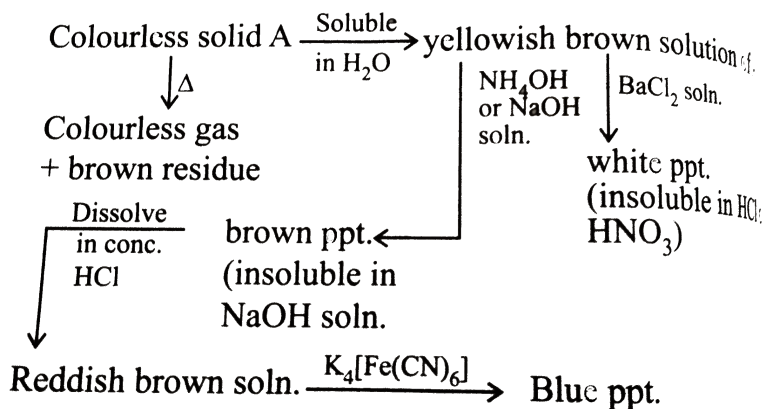


What is the formula of white fumes?



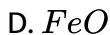
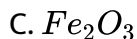
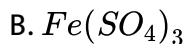
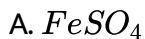
Answer: b

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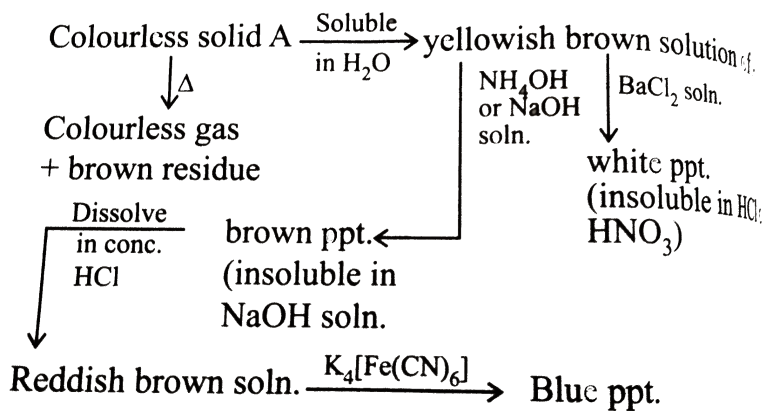
26.

Identify A



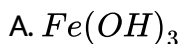
Answer: b

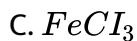
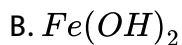
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27.

What is the formula of brown ppt?

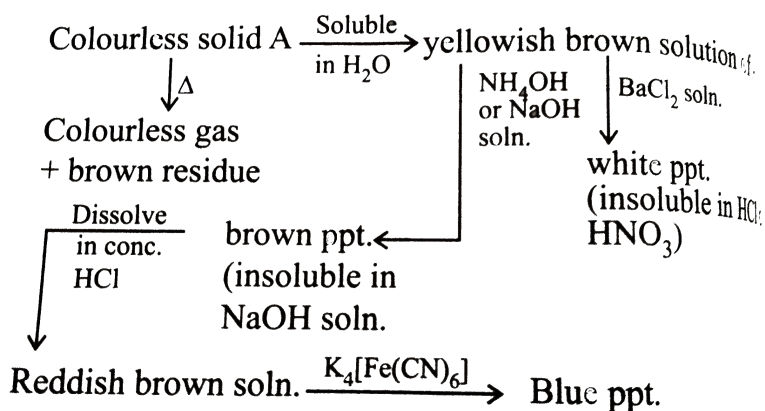




D. None of these

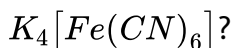
Answer: a

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28.

Which of the following complex is formed when A reacts with



A. Prussian blue

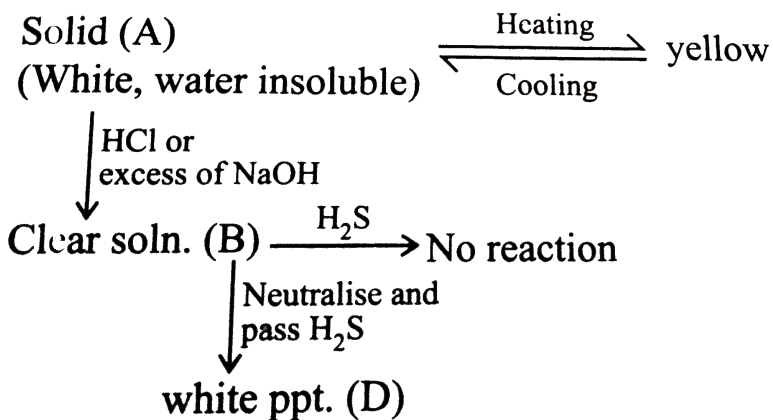
B. Turnbull's blue

C. Brown ring complex

D. Sodium nitroprusside

Answer: a

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29.

Identify A

A. ZnS

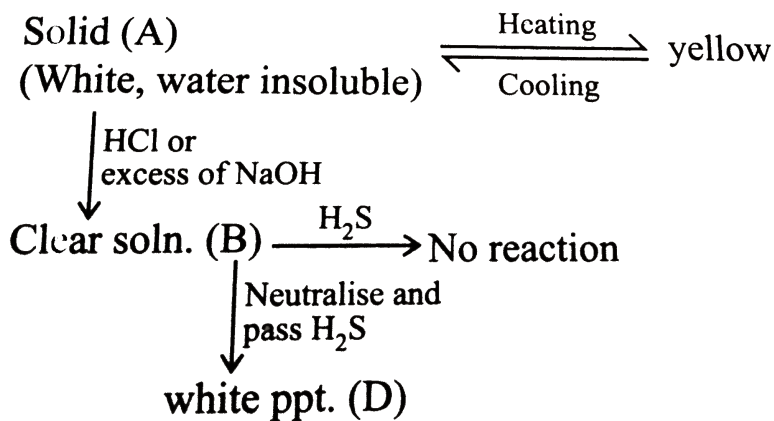
B. ZnO

C. MgO

D. FeO

Answer: b

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30.

Identify B

A. FeCl_2

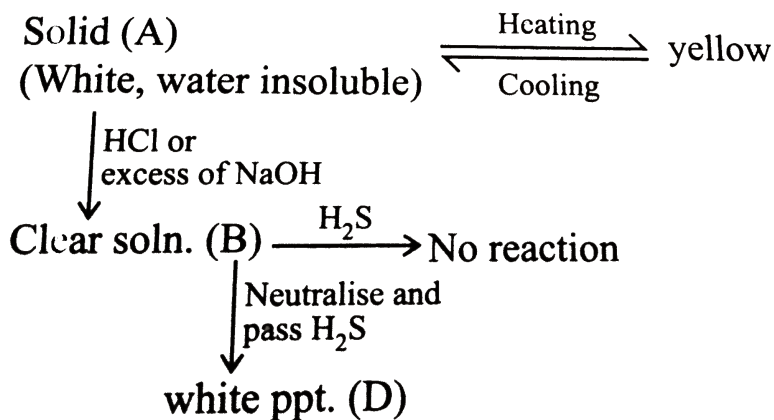
B. NiCl_2

C. ZnCl_2

D. FeCl_3

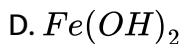
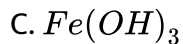
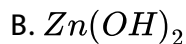
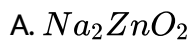
Answer: c

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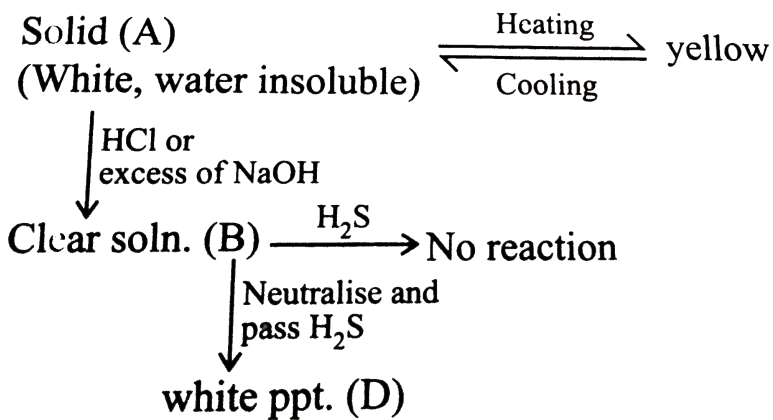
31.

Identify C



Answer: a

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32.

Identify D

A. ZnO

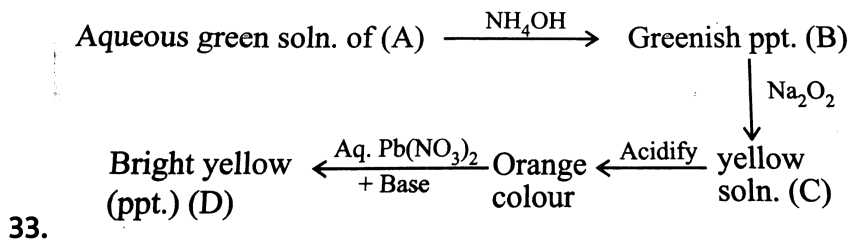
B. ZnS

C. FeO

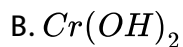
D. FeS

Answer: b

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Identify A

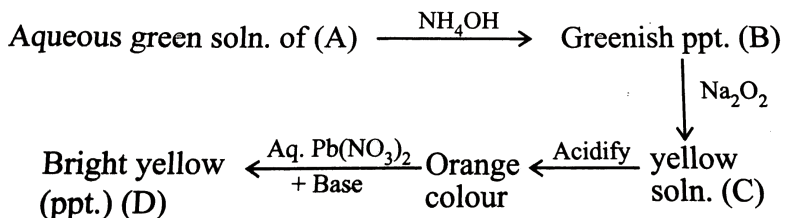


D. None of these

Answer: c

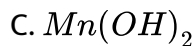
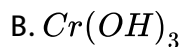


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34.

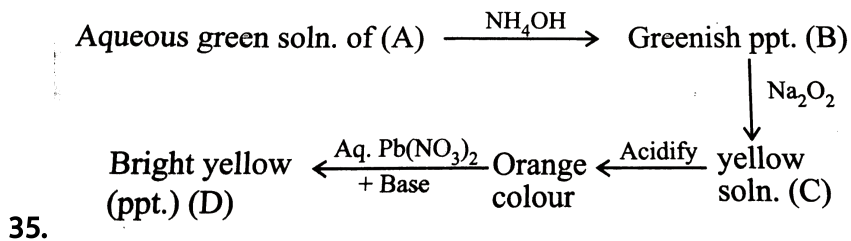
Identify B



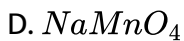
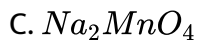
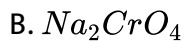
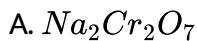
Answer: b



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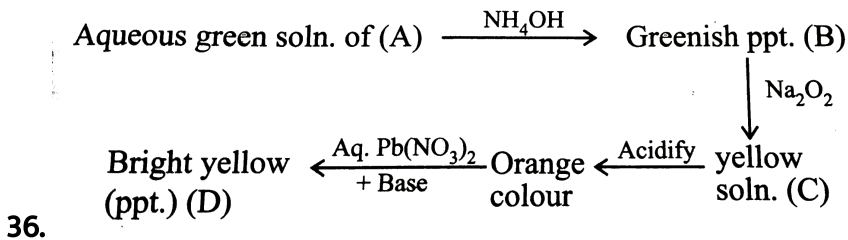


Identify C



Answer: b

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Identify D

A. PbS

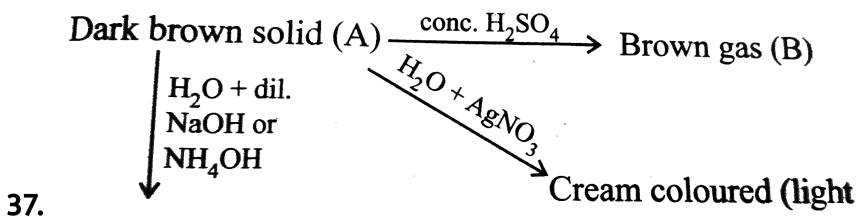
B. PbI_2

C. PbCrO_4

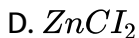
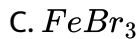
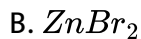
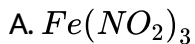
D. Zn(OH)_2

Answer: c

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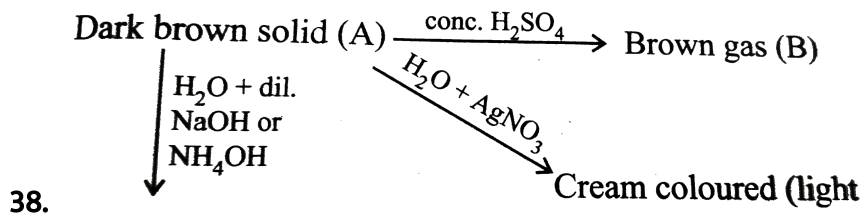


Identify A



Answer: c

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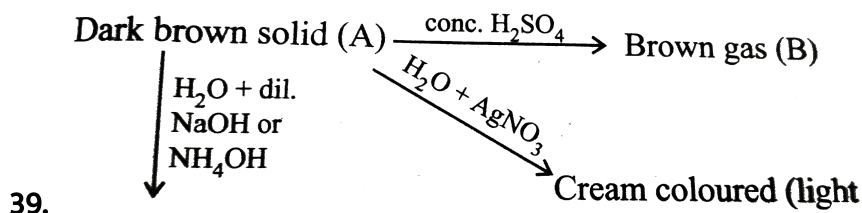


Identify B

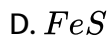
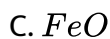
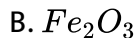
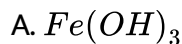


Answer: b

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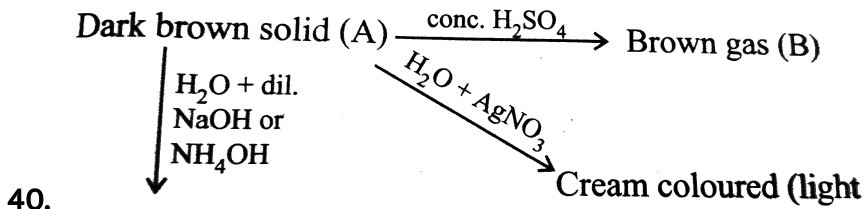


Identify C

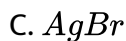
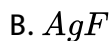
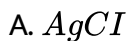


Answer: a

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Identify D



D. None of these

Answer: c

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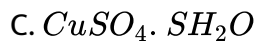
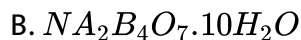
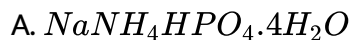
41. i. (A) $\xrightarrow{\Delta}$ glassy transparent bead (B) on platinum wire

(B) + $\text{CuSO}_4 \rightarrow$ coloured bead (C)

ii (A) + $\text{conc. H}_2\text{SO}_4 + \text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{ignite}}$ green flame (D)

iv. Aqueous solution (A) is alkaline

Identify A .



D. None of these

Answer: b



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42. i. (A) $\xrightarrow{\Delta}$ glassy transparent bead (B) on platinum wire

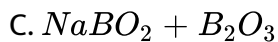
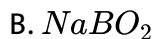
(B) + $CuSO_4 \rightarrow$ coloured bead (C)

ii (A) + *conc.* H_2SO_4 + $CH_3CH_2OH \xrightarrow{\text{ignite}}$ green flame
(D)

iv. Aqueous solution (A) is alkaline

Identify (B) .





D. None of these

Answer: c

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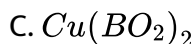
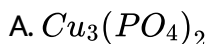
43. i.(A) $\xrightarrow{\Delta}$ glassy transparent bead (B) on platinum wire

(B) + $CuSO_4 \rightarrow$ coloured bead(C)

ii (A) + *conc.* $H_2SO_4 + CH_3CH_2OH \xrightarrow{\text{ignite}}$ green flame
(D)

iv. Aqueous solution (A) is alkaline

Identify AC.



D. None of these

Answer: c



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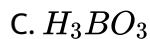
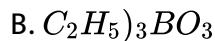
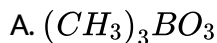
44. i.(A) $\xrightarrow{\Delta}$ glassy transparent bead (B) on platinum wire

(B) + $CuSO_4 \rightarrow$ coloured bead(C)

ii (A) + *conc.* H_2SO_4 + $CH_3CH_2OH \xrightarrow{\text{ignite}}$ green flame
(D)

iv. Aqueous solution (A) is alkaline

Identify D.



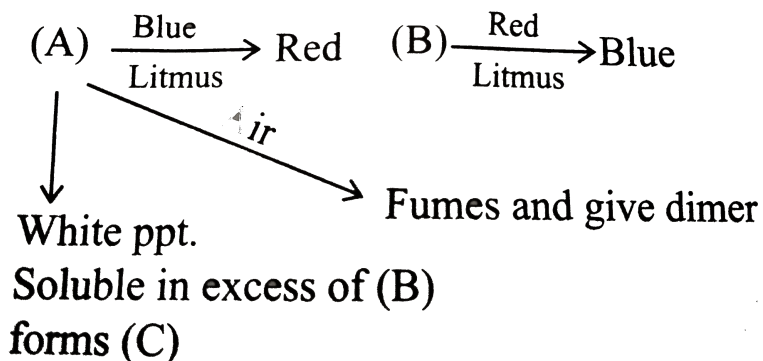
D. None of these

Answer: b

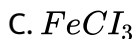


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45. A colourless mixture of two salts (A) and (B) [excess] is soluble in H_2O



Identify A



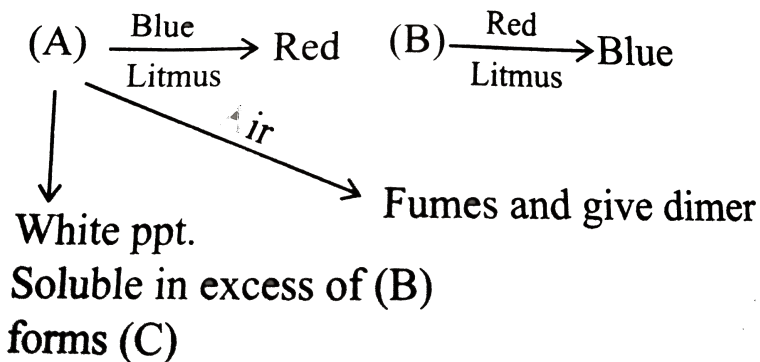
D. None of these

Answer: a

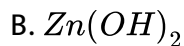
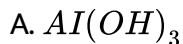


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46. A colourless mixture of two salts (A) and (B) [excess] is soluble in H_2O



Identify B



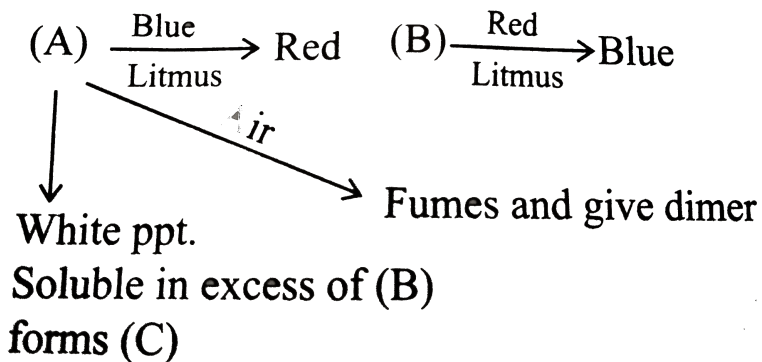
D. None of these

Answer: c

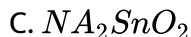
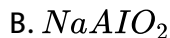
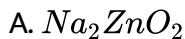


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47. A colourless mixture of two salts (A) and (B) [excess] is soluble in H_2O .



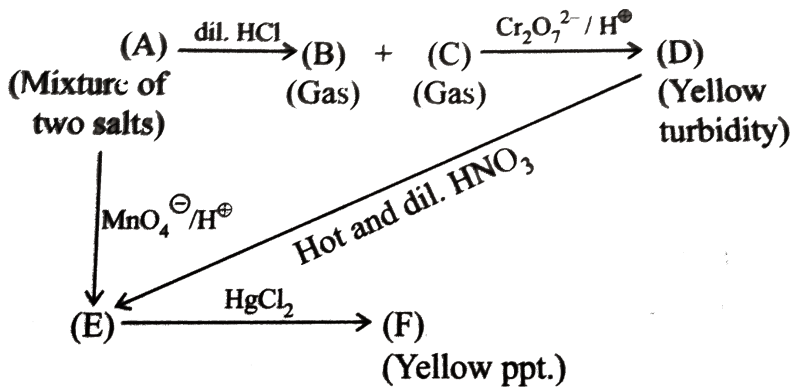
Identify C



D. None of these

Answer: b

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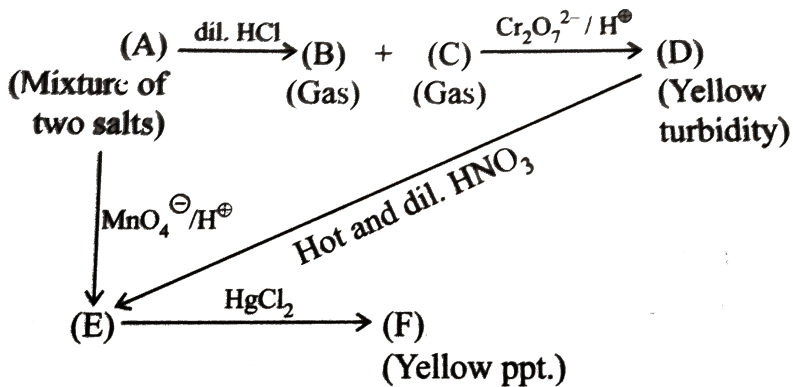


Find the anion (s)

- A. SO_3^{2-}
- B. S_3^{2-} , S^{2-}
- C. SO_3^{2-} , CO_3^{2-}
- D. $\text{S}_2\text{O}_3^{2-}$

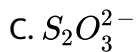
Answer: b

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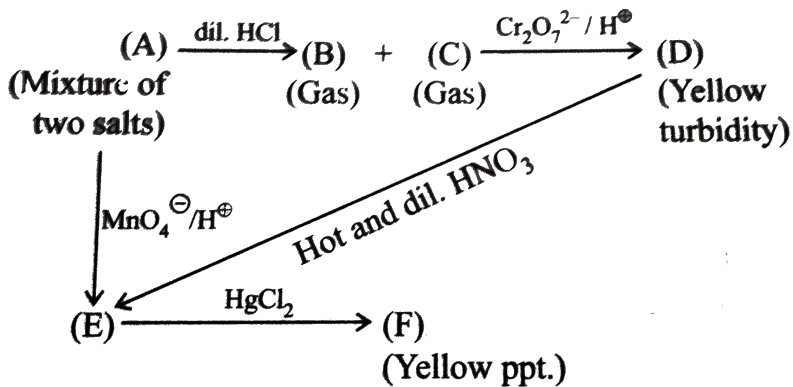
49.

Find out (E)



Answer: d

 View Text Solution



50.

Find out (F)

- A. $\text{HgSO}_4 \cdot 2\text{HgO}$
- B. $\text{HgSO}_4 \cdot 3\text{HgO}$
- C. HgSO_4
- D. $\text{Hg}_2\text{SO}_4 \cdot 3\text{HgO}$

Answer: a

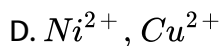
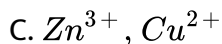
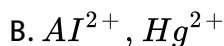
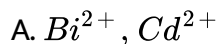
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51. Cations are classified into various groups on the basis of their behaviour against some reagents. The group reagent used for the classification of

most common cation are $HCl, H_2S, NH_4OH, (NH_4)_2CO_3$.

Classification is based on whether a cation reacts with these reagents by the formation of precipitates or not .

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



Answer: a



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52. Cations are classified into various groups on the basis of their behaviour against some reagents. The group reagent used for the classification of most common cations are $HCl, H_2S, NH_4OH, (NH_4)_2CO_3$. Classification is based on whether a cation reacts with these reagents by

the formation of precipitates or not .

An aqueous solution contain Hg^{2+} , Hg_2^{2+} , Pb^{2+} .The addition of $2M HCl$ will precipitate.

A. $HgCl_2$ only

B. $PbCl_2$ only⁻

C. $PbCl_2$ and Hg_2Cl_2

D. $PbCl_2$ and $CdCl_2$

Answer: c



[View Text Solution](#)

53. Cations are classified into various group on the basis of their behaviour against some reagents .The group reagent used for the classification of most common cation are HCl , H_2S , NH_4OH , $(NH_4)_2CO_3$. Classification is based on whether a cation reacts with these reagents by the formation of precipitates or not .

An aqueous solution which is slightly acidic contains cations

Fe^{2+} , Zn^{2+} and Cu^{2+} . The reagent added in excess to this solution would identify the separate Fe^{2+} ion in one step is

A. $2M HCl$

B. $6M NH_3$

C. $6M NaOH$

D. H_2S gas

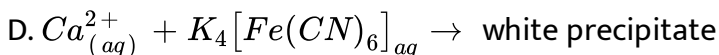
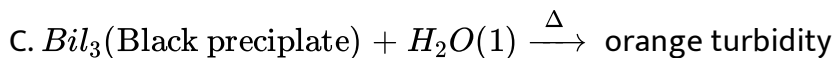
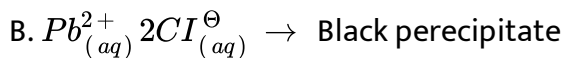
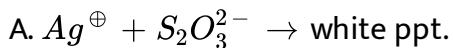
Answer: b



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54. The reagents like $AgNO_3$, $K_4[Fe(CN)_6]$, KCN , KI , K_2CrO_4 Nessler's reagent, find extensive and very important application in quantitative analysis because these reagents form different type of precipitates with different cations for example KI forms yellow precipitate with Pb^{2+} but forms red precipitate with Hg^{2+} , Hence these reagents are widely used in the quantitative analysis of mercuric salts

Which of the following is not correctly matched ?

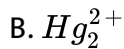
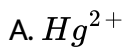


Answer: b

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55. The reagents like $AgNO_3$, $K_4[Fe(CN)_6]$, $KCNS$, KI , K_2CrO_4 Nessler's reagent, find extensive and very important application in quantitative analysis because these reagents form different types of precipitates with different cations. For example, KI forms a yellow precipitate with Pb^{2+} but forms a red precipitate with Hg^{2+} . Hence, these reagents are widely used in the quantitative analysis of mercuric salts.

Which of the following cations (i.e. basic radicals) forms a coloured (not white) precipitate with an aqueous solution of potassium iodide if the precipitate does not dissolve in excess of reagent?

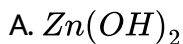


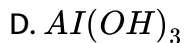
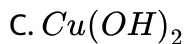
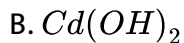
Answer: b

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56. The reagents like $AgNO_3$, $K_4[Fe(CN)_6]$, $KCNS$, KI , K_2CrO_4 Nessler's reagent, find extensive and very important application in quantitative analysis because these reagents form different type of precipitates with different cations for example KI forms yellow precipitate with Pb^{2+} but it forms red precipitate with Hg^{2+} , Hence these reagents are widely used in the quantitative analysis of mercuric salts

Which of the following hydroxides does not dissolve in ammonium solution but dissolves in sodium hydroxide?





Answer: d



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57. NH_3 solution was added to four sample solution in difference test tube and found the following observation about the precipitate.

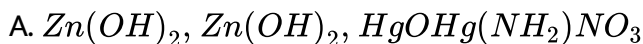
a. White ppt which is solution in excess of NH_3 solution

b. On heating which is white in cold but yellow on heating

c. The cation present in (b) forms white ppt, with hypo solution which give black ppt on heating

d. The cation present in (c) forms soluble complex with excess of NH_3 solution

White ppts in (a),(b) and (c) respectively obtained are



B. $Cd(OH)_2$, $Zn(OH)_2$, $HgOHg(NH_2)NO_3$

C. $HgOHg(NH_2)NO_3$, $Zn(OH)_2$, $Cd(OH)_2$

D. $Al(OH)_3$, $Zn(OH)_2$, $Pb(OH)_2$

Answer: a,b

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58. NH_3 solution was added to four sample solution in difference test tube and found the following observation about the precipitate.

a. White ppt which is solution in excess of NH_3 solution

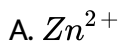
b. On heating which is white in cold but yellow on heating

c. The cation present in (b) forms white ppt, with hypo solution which give black ppt on heating

d. The cation present in (c) forms soluble complex with excess of NH_3 solution

The solution initially present in (a) + H_2S (basic medium) gives ppt, then

(a) may have



Answer: a,b



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59. NH_3 solution was added to four sample solution in different test tube and found the following observation about the precipitate.

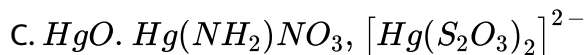
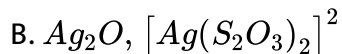
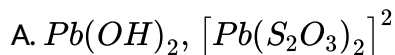
a. White ppt which is soluble in excess of NH_3 solution

b. On heating which is white in cold but yellow on heating

c. The cation present in (b) forms white ppt, with hypo solution which gives black ppt on heating

d. The cation present in (c) forms soluble complex with excess of NH_3 solution

White ppt in (c) and the soluble complex from white ppt with the type solution is//are



D. None of these

Answer: a,c



[View Text Solution](#)

60. (A) is a colourless solid, it metal when heated and gives of a gas (B) Which is supporter of combustion , if heating is contimed the white of the solid disuppears , When (A) is heatyed with an aqueous $NaOH$ solution , an alkaline gas (C) is evolved ,When gas(B) is leasted with sodumine ,a colourless solid (D) is formed .When (D) is heated with dil H_2SO_4 a colourless liquid (F) is formed

The compound E has

A. Linear structure

B. Bent structure

C. Terehedral structure

D. None of these

Answer: b

 [View Text Solution](#)

61. (A) is a colourless solid, it metal when heated and gives of a gas (B) Which is supporter of combustion , if heating is contimed the white of the solid disuppears , When (A) is heatyed with an aqueous $NaOH$ solution , an alkaline gas (C) is evolved ,When gas(B) is leasted with sodumine ,a colourless solid (D) is formed .When (D) is heated with dil H_2SO_4 a colourless liquid (F) is formed .

The mass of compound E is

A. Ammonia

B. Hydrazoic acid

C. Hydrogen amide

D. None of these

Answer: b

 [View Text Solution](#)

62. (A) is a colourless solid, it metal when heated and gives of a gas (B) Which is supporter of combustion , if heating is contimed the white of the solid disappears , When (A) is heatyed with an aqueous $NaOH$ solution , an alkaline gas (C) is evolved ,When gas(B) is leasted with sodumine ,a colourless solid (D) is formed .When (D) is heated with dil H_2SO_4 a colourless liquid (F) is formed .

The compound C has

A. Linear geometry

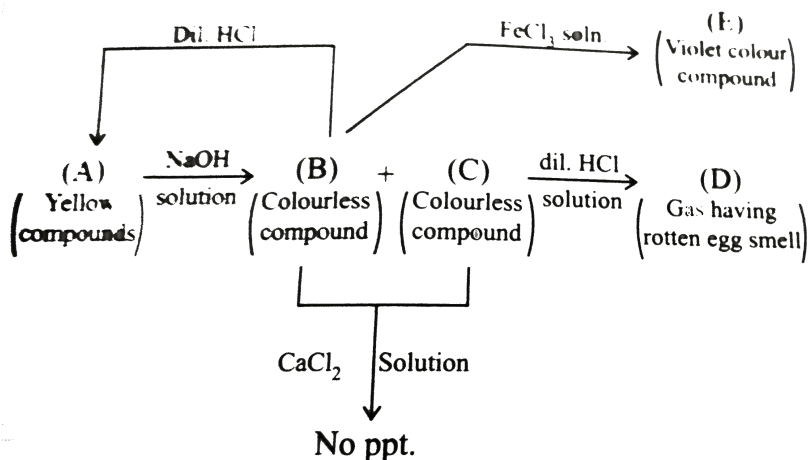
B. Pyramidal

C. Tetrahedral

D. None of these

Answer: b

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compound (B) on strong heating produces compound(s) which has/have

A. Chain structure

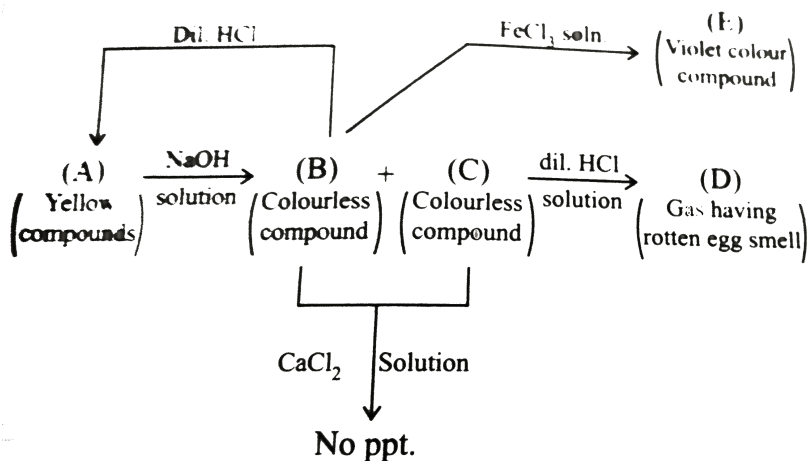
B. Tetrahedral structure

C. Both (a) and (b)

D. None of these

Answer: c

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Which of the following statement is/are correct for gas (D) ?

(I) it has the state of hybridisation sp^3

(II) Gas can be identified by CaCl_2 solution

(III) Gas can be identified by $\text{Pb}(\text{OAc})_2$ solution

(IV) Gas can be identified by passing through solution

A. I,IV

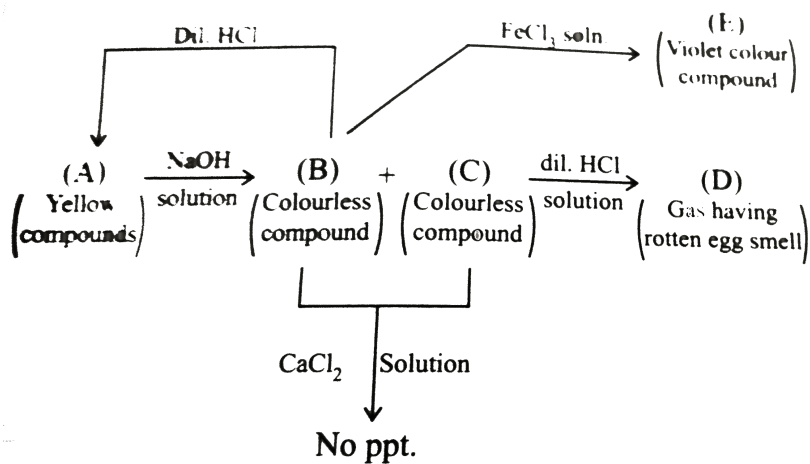
B. I,III

C. III only

D. I,II,IV

Answer: c

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Compound (B) on reaction with $[Na(en)_3][NO_3]_2$ gives a coloured complex exhibiting

A. Optical isomerism

B. Geometrical isomerism

C. Linkage isomerism

D. No isomerism

Answer: a

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66. A colourless (A) when placed into water forms a heavy white turbidity of (B) solid (A) gives a clear solution in concentrated HCl when HCl solution is added to clear solution water, (B) forms again (B) dissolves in dilute HCl . When H_2S is passed through a suspension of (A) or (B), a black precipitate (C) forms, (C) is insoluble in yellow ammonium sulphide $(NH_4)_2S$, concentrated H_2SO_4 added to solid (A) liberates gas (D) gas (D) is water soluble and gives white precipitate with mercuric salts (E) and not mercuric salt. The black precipitate (C) dissolves in HNO_3 , (1, 1) to give a solution to which H_2SO_4 is added followed by addition of NH_4OH when a white precipitate (F) is formed (E) gives a black ppt, (G) with

solution of sodium stannite.

When compound (E) reacts with NH_4OH , then product is a

A. White ppt

B. Black ppt

C. yellow ppt

D. Green ppt

Answer: b

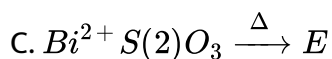
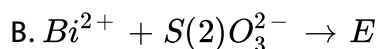
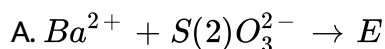


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67. A colourless (A) when placed into water a heavy white turbidity of (B) solid (A) gives a clear solution in concentrated HCl when HCl solution is added to clear solution water, (B) forms again (B) dissolves in dilute HCl . When H_2S is passed through a suspension of (A) or (B), a black precipitate (C) forms, (C) is insoluble in yellow ammonium sulphide $(NH_4)_2S$, concentrated H_2SO_4 added to solid (A) liberates gas (D) gas (D) is water soluble and gives white precipitate with mercuric salts (E) and not

mercuric salt .The black precipitate (C) dissolves in HNO_3 , (1, 1) to give a solution to which H_2SO_4 is added followed by addition of NH_4OH when a white precipitate (F) is formed (E) gives a black ppt , (G) with solution of sodium stannite.

Compound (C) is also formed by the following reaction



D. None of these

Answer: c



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68. A colourless (A) when placed into water a heavy white turbidity of (B) solid (A) gives a clear solution in concentrated HCl when HCl solution is added to clear solution water, (B) forms again (B) dissolves in dilute HCl . When H_2S is passed through a suspension of (A) or (B), a

black precipitate (C) forms, (C) is insoluble in yellow ammonium sulphide $(NH_4)_2S$, cone H_2SO_4 added to solid (A) liberates gas (D) gas (D) is water soluble and gives white precipitate with mercuric salts (E) and not mercuric salt. The black precipitate (C) dissolves in HNO_3 , (1, 1) to give a solution to which H_2SO_4 is added followed by addition of NH_4OH when a white precipitate (F) is formed (E) gives a black ppt, (G) with solution of sodium stannite.

Compound (B) is not soluble in

A. Tartaric acid

B. HCl

C. HNO_3

D. H_2SO_4

Answer: a



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1. When Zn reacts with cone HNO_3 , then $Zn(NO_3)_2$ and NO_2 are formed, the reaction(s) involved in this process is/are

- A. Redox reaction
- B. Acid base reaction
- C. Ion exchange reaction
- D. None

Answer: a,b



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2. Select the correct statement(s):

- A. $NaHCO_2$ is sparingly soluble in water because it has massive H-bonding
- B. When $BaCl_2$ reacts with bicarbonate, then white ppt of $BaCO_3$ is formed

C. $HgCl_2$ is poisonous

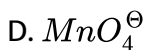
D. Phenolphthalein is turned pink by soluble carbonate and colourless by soluble hydrogen carbonate.

Answer: a,c,d



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3. Which of the following anion may be identified by their ppt reaction in aqueous solution ?



Answer: a,b,c



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4. Select the correct statement(s):

A. White ppt of $BaSO_3$ and $CaSO_4$ is soluble in dil HNO_3 dil HCl and CH_3COOH

B. On standing the precipitate $BaSO_4$ is slowly oxidised to salphte and then becomes insolable in dilute mineral acid

C. When excess of SO_2 gas is passed into the solution of $BaSO_3$ and $CaSO_3$ then white turbidity disappiare

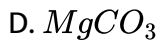
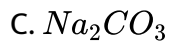
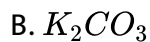
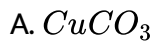
D. The hydrogen carbonate of alkali metals are soluble in water , but are less soluble then the cprresponding normal carbotates

Answer: b,c,d



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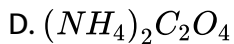
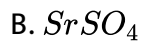
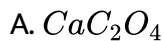
5. Which of the following carbonates do not give metal oxide on heating ?



Answer: b,c,

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6. Which of the following compounds are soluble in water ?



Answer: c,d,

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7. Which of the following halides are not soluble in water ?

A. $AgCl$

B. $AgBr$

C. $PbCl_2$

D. AgF

Answer: a,b,c



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8. The brown ring test is performed for the qualitative detection of

A. Bromides

B. Iodides

C. Nitrates

D. Nitrite

Answer: c,d



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9. Which of the following salt does give positive test for nitrate ion?

A. KNO_3

B. $NaNO_3$

C. $Mg(NO_3)_2$

D. None of these

Answer: a,b,c



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10. which of the following anions are easily removed from aqueous solution by precipitation ?



Answer: a,b,d



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11. A white ppt , is obtained when

A. A solution of $BaCl_2$ is treated with Na_2CO_3

B. A solution of $CaCl_2$ is treated with Na_2SO_3

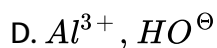
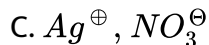
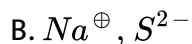
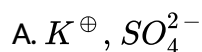
C. A solution of $ZnSO_2$ is treated with Na_2CrO_4

D. A solution of $Pb(NO_3)_2$ is treated with Na_2CrO_4

Answer: a,b,c

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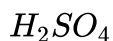
12. Which pair would not be expected to form precipitate when solution are mixed?

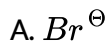


Answer: a,b,c

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13. Riddish brown gas is obtain with the following are treated with cone





Answer: a,b,c

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14. The correct statement (s) is/are with respect to chromy chloride test

A. Formation of lead chromate

B. Formation of chromyl chloride chromate

C. Liberation of chloride

D. Formation of reddish -brown vapours

Answer: a,b,d

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15. Nitrite (NO_2^\ominus) interferes in the ring -test of nitrate (NO_3^\ominus) some of the following reagent can be used for the removed of nitrate

A. AgF

B. $(NH_2)_2CS$ (thiourea)

C. NH_2SO_3H (sulphanitlic acid)

D. None of these

Answer: a,b,c



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16. If (X) turn lime water milky , then X may be

A. CO_2

B. SO_2

C. NO_2

D. O_2

Answer: a,b,

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17. If (X) turns acidified $K_2Cr_2O_7$ solution green, then X may be

A. SO_2

B. CO_2

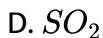
C. NO_2^\ominus

D. Fe^{2+}

Answer: a,c,d

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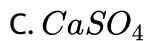
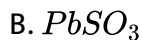
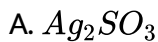
18. If (X) decolourises acidified $KMnO_4$ solution, then X may



Answer: a,b,c,d

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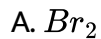
19. Which of the following ppt (s) of sulphite ion have white colour ?



Answer: a,b,c,d

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20. Which of the following gases have brown colour ?

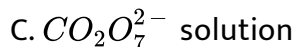
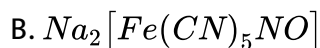
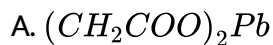


Answer: a,b



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



D. $CaCl_2$

Answer: a,b,d

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22. Consider the following reaction



Formation of the product in the reaction cannot be identified by

A. $FaCl_3 / dil, HCl$ when blood-red colour appears

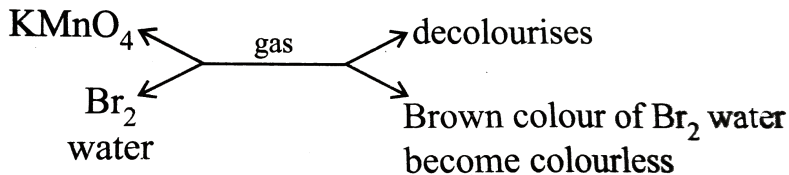
B. $FaCl_3 / dil, HCl$ when blue colour appears

C. $K_2Cr_2O_7, HCl$ when green colour appears

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

Answer: b,c,d

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23. The gas will be

The gas will be

A. CO_2

B. SO_2

C. H_2S

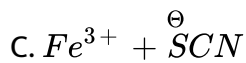
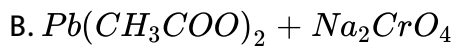
D. SO_3

Answer: b,c

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24. Which of the following combinations in an aqueous medium will give a yellow ppt. ?

A. $\text{AgNO}_3 + \text{NaBr}$

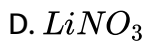
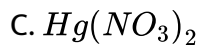
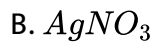
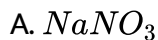


D. None of these

Answer: a,b

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25. Which of the following nittates are water soluble ?



Answer: a,b,c,d

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

- A. Lime water
- B. Zine nitropruside paste in water
- C. Potasium iodate and strach
- D. Acidfied potessium dichromate of aqueous

Answer: b,c,d

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27. Each of these solution is added to a mixture of aqueous solution oof iodide and chloroform test for iodine when the solution are vigeorrouslly mixed?

- A. NaCl solution
- B. NaBr solution

C. Chloride water

D. Bromine water

Answer: c,d

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28. For the lime water test , if the observation are position for the unknown sample , then which of the following conclusion (s) is /are incorrect?

A. sample has only NO_2

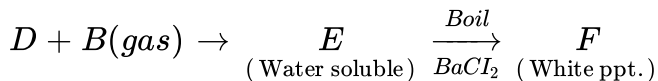
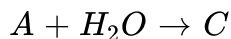
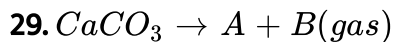
B. sample has only SO_3

C. sample has only CO_2 and SO_2

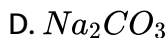
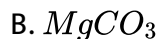
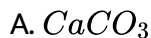
D. sample has H_2S

Answer: a,b,d

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Select the correct options (s) for whitge ppt. shown in the above reactions.



Answer: a,c



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

A. In $S_2O_3^{2+}$, both sulphur are different in nature

B. Sodium acedact Mn,SN,Fe oxalate giving different type of product

C. Aqueous solution of OCI^\ominus , S^{2-} and CO_3^{2-} are basic in nature

D. NO_2^\ominus oxidises I^\ominus whereas Br_2 and Cl_2 oxidies NO_2^\ominus

Answer: a,c

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31. Which of the following anion(s) is/are interfering radicate ?

A. BO_3^{3-}

B. F^\ominus

C. PO_4^{3-}

D. None of these

Answer: a,b,c

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Exercises (Multiple Correct) Part-B (Analysis Of Cations)

1. Blue coloured compound are obtained when

- A. Fe^{2+} ion react with potassium ferriyanide
- B. Fe^{3+} ion react with potassium ferrocyanide
- C. Fe^{3+} ion react with potassium ferriyanide
- D. Fe^{2+} ion react with potassium ferroyanide

Answer: a,b



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2. Potassium ferrocyanide is used in the detection of

- A. Fe^{2+} ions
- B. Fe^{3+} ions

C. Cu^{2+} ions

D. Cd^{2+} ions

Answer: a,b,c

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3. Bromine is not recognised by is

A. Ability to turn starch iodide paper blue

B. Ability to dissolve in CS_2 to give an orange colour to the organic layer

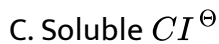
C. Ability to dissolve in CS_2 to give a violet colour to the organic layer

D. Ability to turn $FeSO_4$ solution black

Answer: c,d

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4. I_2 can be obtained from KI solution by the action of

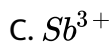


Answer: a,b



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5. Which of the following is not precipitate by H_2S in presence of cone acid soln



D. Cd^{2+}

Answer: b,d



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6. Which of the following is (are) soluble in excess of $NaOH$?

A. $Cr(OH)_3$

B. $Fe(OH)_3$

C. $Al(OH)_3$

D. $Zn(OH)_2$

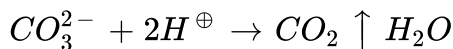
Answer: c,d



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7. Select the correct statement(s):

- A. When $HgCl_2$ reacts with carbonate ion, then basic mercury (II) carbonate ion, then P^H of solution high increase
- B. When $HgCl_2$ reacts with carbonate ion, Then p^H of solution highly increases
- C. The excess of carbonate acts as buffer reacts with the hydrogen ions formed in the reaction



- D. White ppt of $MgCO_3$ soluble in dil H_2SO_4

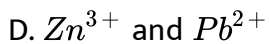
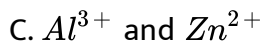
Answer: a,c,d

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8. Concentrated aqueous sodium hydroxide cannot separate a mixture of

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

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

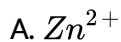


Answer: a,c,d



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9. The metal ion(s) which is/are not precipitate when H_2S is passed with HCl is ion



Answer: a,b,d



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10. An aqueous solution of a substance gives a white precipitate on treatment with dil. HCl which dissolves on heating. When H_2S is passed through the hot acidic solution a black precipitate is obtained. The substances are not :

A. Hg_2^{2+} salt

B. Cu^{2+} salt

C. Ag^{\oplus} salt

D. Pb^{2+} salt

Answer: a,b,c

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11. When H_2S gas is passed through HCl containing aqueous solution of $CuCl_2$, $HgCl_2$, $BaCl_2$, $BiCl_3$ and $CoCl_2$ then which of the following precipitate out ?

A. CuS

B. HgS

C. Bi_2S_3

D. CoS

Answer: a,b,c

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12. Which of the following is/are soluble in excess of NaOH , (X) Pb(OH)_2 (Y), CuS , (Z), Al(OH)_3

A. X

B. Y

C. Z

D. None of these

Answer: b,c

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13. Aqueous solution contains $Zn(CH_2COO)_2$, $Cd(CH_3COO)_2$ and $Cu(CH_3COO)_2$ on passing H_2S gas, there is a precipitate of As sulphide



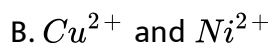
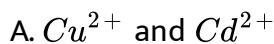
D. None of these

Answer: a,b,c



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14. Which of the following pairs can be separated by H_2S in dil HCl ?



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

D. Hg^{2+} and Al^{2+}

Answer: b,c,d



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15. An inorganic salt solution pairs on treatment with HCl will not give a white precipitate of which metal ions?

A. Hg_2^{2+}

B. Hg^{2+}

C. Zn^{2+}

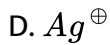
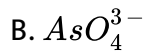
D. Al^{3+}

Answer: b,c,d



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16. Ammonium molybdate is used to test the radical

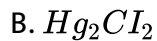
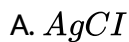


Answer: a,b



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17. Which of the following chlorides are water soluble ?



Answer: c,d



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18. Which of the following metal sulphide is soluble in hot and dil HNO_3 ?

A. Ag_2S

B. PbS

C. CdS

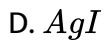
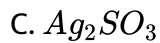
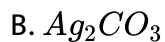
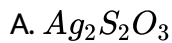
D. HgS

Answer: a,b,c



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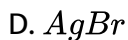
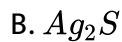
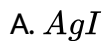
19. Which of the following ppt , is soluble dil , HNO_3 and NH_3 solution ?



Answer: a,b,c

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20. Which of the following ppt is insoluble in NH_3 solution ?



Answer: a,b

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21. Which of the following will be completely or partially dissolved in NH_4OH ?

A. $AgCl$

B. $AgBr$

C. $BaSO_4$

D. AgI

Answer: a,b



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22. Interfering radicals interfere the test of

A. Group III radicals only

B. Group III radicals or downward

C. Cation which are present in group II filtrate

D. None of these

Answer: b,c

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23. Which of the following is/are correct for potassium ferricyanide?

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

B. it gives a red precipitate of mixed salt Cd^{2+} ions

C. If in excess gives a white precipitate with Zn^{2+}

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

Answer: a,c

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24. Which of the following statement is not correct ?

- A. Lead(II) chloride is soluble in hot water and resappears on cooling
- B. in dilute HCl the solubility of $PbCl_2$ is higher than in hot water
- C. in concentrated HCl , $PbCl_2$ is insoluble
- D. Lead (II) chloride forms the complex ion having white ppt ?

Answer: b,c

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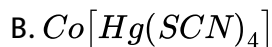
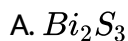
25. Which of the following compounds are having white ppt ?

- A. $K_2Fe[Fe(CN)_6]$
- B. $[Fe(H_2O)_3(SCN)_1]^{2+}$
- C. ZnS
- D. $Zn(OH)_2$

Answer: a,c,d

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26. Which of the following compound do not have white colour in the form of ppt ?



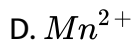
Answer: a,b,c,d



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27. Out of Cu^{2+} , Ni^{2+} , Co^{2+} and Mn^{2+} of those that dissolve in dil HCl only one give precipitate when H_2S is passed. Identify the corresponding order which do not give precipitation :



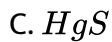


Answer: a,c,d



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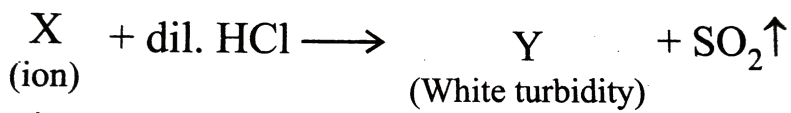
28. Which of the following sulphides are soluble only in aqua regia ?



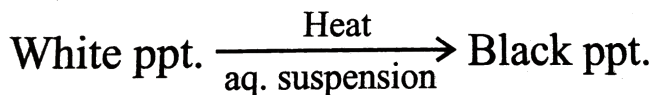
Answer: a,b,c



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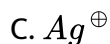
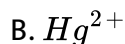
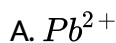


↓
Reagent



29.

Which of the following cation may be present in white ppt ?



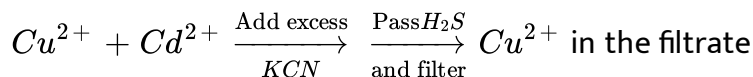
Answer: a,b,c



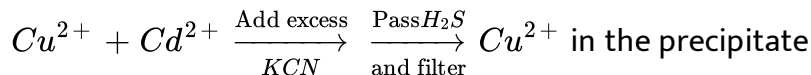
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30. Which of the following is/are connect process for the separation of given ions ?

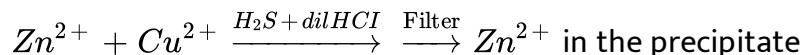
A. Cu^{2+} from the mixture of Cu^{2+} and Cd^{2+} in aqueous solution



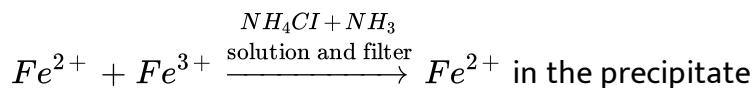
B. Cu^{2+} from the mixture of Cu^{2+} and Cd^{2+} in aqueous solution



C. Zn^{2+} from the mixture of Zn^{2+} and Cu^{2+} in aqueous solution



D. Fe^{3+} from the mixture of Fe^{2+} and Fe^{2+} in aqueous solution



Answer: a,b



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Exercises (Multiple Correct) Part-C(Dry Test)

1. Flame test is not gives by

A. Mg^{2+} ions

B. Ba^{2+} ion

C. Be^{2+} ions

D. Ca^{2+} ions

Answer: a,c

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2. Borax bead test is not given by

A. Copper salts

B. Nickel salts

C. Aluminium salts

D. Magnestion salts

Answer: c,d

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3. Which of the following respond to borax test ?

- A. Nickel salts
- B. Copper salts
- C. Cobalt salt
- D. Aluminium salt

Answer: a,b,c



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4. In breax bead test,Which compound (s)is/are not formed?

- A. Orthoborate
- B. Metaborate
- C. Double oxide

D. Tetraborate

Answer: a,b,d



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5. Which of the following cation (s) will turn blue in oxidising flame ?

A. Co^{2+}

B. Cr^{3+}

C. Ni^{2+}

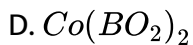
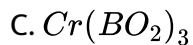
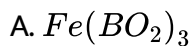
D. Cu^{2+}

Answer: a,d



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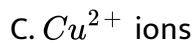
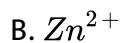
6. Which of the following substance are green ?



Answer: a,c

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7. Borax heat test is given by



Answer: a,c,d

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8. Colourless salt (X) $\xrightarrow{\Delta}$ (Y) $\xrightarrow{Cu^{2+}, \Delta}$ coloured head (Z), (X) can be

A. Borax

B. Microcostric salt

C. Copper sulphate

D. None of these

Answer: a,b



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Exercises (Multiple Correct) Part-D (Miscellaneous)

1. Select the correct statement(s):

A. Normal and polysulphides of alkali metals are soluble in water

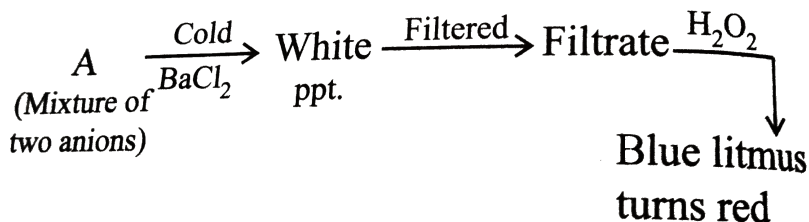
B. The sulphides of aluminum and magnesium can only be prepared under dry condition as they are completely hydrolysed by water

C. When filter paper is moistened with a solution of sodium manganate made alkaline with sodium hydroxide or ammonia solution, a purple colouration is produced with free hydrogen sulphide

D. Thiosulphate salt of *Pb*, *Ag* and *Ba* are insoluble and dissolve in excess of sodium thiosulphide solution forming thiosulphide.

Answer: a,b,c

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2.

Mixture of A contains

A. CO_3^{2-} , HCO_3^{\ominus} anions

B. CO_3^{2-} , HSO_3^{\ominus} anions

C. SO_3^{2-} , HSO_3^{\ominus} anions

D. None of these

Answer: b,c

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

A. Manganese salt give a violet borax bead test in reducing flame

B. Form a mixed precipitate of $AgCl$ and AgI ammonia solution
dissolve only $AgCl$

C. Ferric ions give a deep green precipitate on adding potassium
ferrioxalate solution

D. On boiling the solution having K^{\ominus} , Cu^{2+} and HCO_3^{\ominus} ions we get

a precipitate of $K_2Cu(CO_3)_2$

Answer: a,c,d



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4. A solution of colourless salt H on boiling with excess $NaOH$ produces a non-flammable gas. The gas evolution ceases after sometime. Upon addition of Zn dust to the same solution the gas evolution restarts. The colourless salt(s) H is (are)

A. NH_4NO_3

B. NH_4NO_2

C. NH_4Cl

D. $(NH_4)_2SO_4$

Answer: a,b



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5. Which of the following statement is/are not true ?

- A. $Fe^{2+}_{(aq)}$ gives brown colour with NH_4SCN
- B. $Fe^{3+}_{(aq)}$ gives blood red colour with NH_4SCN
- C. $Fe^{2+}_{(aq)}$ yields colour with $K_2Fe(CN)_6$
- D. Ag^{\oplus} reacts with CO_3^{2-} then black ppt is formed

Answer: a,c,d

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6. Which of the following react with dil H_2SO_4 ?

- A. $CaCO_3$
- B. KNO_2
- C. Na_2S

D. $BaCl_2$

Answer: a,b,c,d

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7. Conc. H_2SO_4 will not give any gas with

A. $ZnSO_4$

B. barium phosphate

C. magnesium borate

D. sodium oxalate

Answer: a,b,c

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8. Select the correct statement(s):

- A. All carbonate salt are soluble except carbonate salt alkline metals and $(NH_4)_2CO_3$
- B. All carbonate salt are soluble except $NaHCO_3$ white is sparingly soluble
- C. All sulphite salt are insoluble excess sulphate salts is alkline metal and $(NH_4)_2SO_3$
- D. All MnO_4^\ominus salt are insoluble

Answer: b,c

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9. Select the correct statement(s):

- A. White ppt of $BaCO_3$ and $CaOC_3$ and $CaCO_3$ is soluble in dil HNO_3 dil HCl , CH_3COOH and soda water
- B. White ppt of $PbCO_3$ is soluble in dil HNO_3 dil CH_3COOH

C. White ppt of $AgCO_3$ is soluble in dil HNO_3 and NH_3 soluble

D. HCN and H_2HO_3 are stronger acids than H_2CO_3

Answer: a,b,c,d

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10. Select the correct statement(s):

A. HCl is used as acid for titration of SO_2

B. Soda ash solution is very useful when any insoluble salt is present in a given mixture

C. SO_2 gas is identified by a filter paper moistened with potassium iodate and starch solution

D. When zinc and sulphuric acid reacts with sulphite, then hydrogen sulphide gas is evolved which may be detected by holding lead acetate paper to the mouth of the test tube

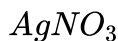
Answer: a,b,c,d



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11. Select the correct statement(s):

A. $Ag_2S_2O_3$ appear as white precipitate when $Na_2S_2O_3$ reacts with



B. $Ag_2S_2O_3$ is unstable turning black standing due to formation of



C. $S_2O_3^{2-}$ can form soluble complex $[Ag(S_2O_3)_2]^{3-}$ with Ag^{\oplus}

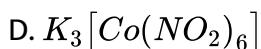
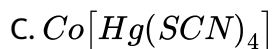
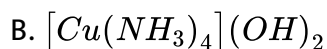
D. $Na_2S_2O_3$ is used in photography.

Answer: a,b,c,d



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12. Which of the following complex(s) will have blue colour solution or ppt ?



Answer: a,b,c



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

A. Soluble bicarbonates give white precipitate with $MgCl_2$ in cold

B. Soluble calcium bicarbonates give white precipitate with dilute ammonia solution followed by $MgSO_4$.

C. Bicarbonates are generally soluble in water

D. $Hg(II)$ chloride forms a reddish-brown precipitate in a solution of soluble carbonate.

Answer: b,c,d



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

- A. Soluble sulphide gives black precipitate with $AgNO_3$ solution which is soluble in hot dilute nitric acid
- B. Soluble sulphide produces a yellow precipitate with a suspension of a cadmium carbonate.
- C. Sulphide ion reacts with sodium nitroprusside and gives a purple colouration
- D. Free H_2S gas reacts with form precipitate with tetrathionate plumbate (II) solution

Answer: a,b,c



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

A. In thiourea test for nitric, a green coloured solution is obtained

B. It is not necessary to carry out the chromyl chloride test in a dry test tube

C. In $PbNO_3$ the brown ring test can be performed with its water extract

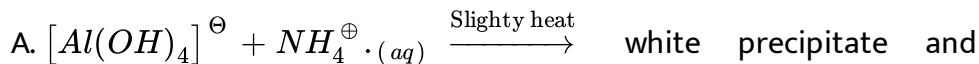
D. Suspension of $CdCO_3$ gives black ppt, with sodium sulphide solution

Answer: a,b,c,d

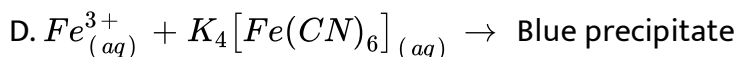
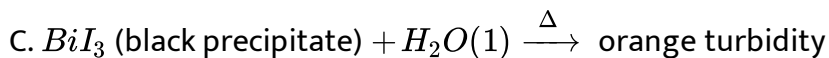
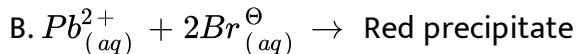


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16. Which of the following statement(s) is(are) correct ?



liberation of ammonia



Answer: a,c,d

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17. Pick out the correct statement (s):

A. Golden yellow PbI_2 dissolves in hot water to give is colourless solution

B. Ba^{2+} and Ca^{2+} ions can be separated by adding SO_4^{2-} ion in acetic acid medium

C. Salt of calcium copper and nickel give a green flame colour

D. The sulphide ion gives with alkline sodium nitroprtasside ,a violet colour

Answer: a,b,d

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

A. Cu^{2+} salt form soluble comlex with excess KCN

B. Cu^{2+} salt form soluble complex with aqueous ammonia

C. Cu^{2+} salt form soluble complex with KI

D. A pieces of iron or zine when placed in Cu^{2+} salt solution , precipitate copper

Answer: a,b,d

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

- A. In a mixture of Sr^{2+} and Ca^{2+} , ammonia sulphate precipitate only Sr^{2+} as $SrSO_4$ but $CaSO_4$ dissolve in ammonia sulphide forming a soluble complex
- B. Barium chromate is insoluble in dilute acetic acid
- C. $Cr(OH)_3$ is soluble in $NaOH$ and Br_2 water white $Fe(OH)_3$ is insoluble
- D. Cu and Cd separation is based upon the fact that in presence of excess KCN , only Cd is precipitate as sulphide on passing H_2S

Answer: a,b,c,d



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20. Potassium cyanide is used for separating

A. Co^{2+} and Ni^{2+}

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

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

D. Ba^{2+} and Ca^{2+}

Answer: a,b



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Exercises (Single Correct) Part-A (Analysis Of Anions)

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

A. $NaOH$

B. $Pb(NO_3)_2$

C. $BaSO_4$

D. KOH

Answer: b



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2. Which compound will not give position chroyl choride test?

A. Copper chloride, $CuCl_2$

B. Mercuridechloride, $HgCl_2$

C. Zine chloride, $ZnCl_2$

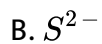
D. Anilmium chloride, $C_4H_3NH_3^{\oplus} Cl^{\ominus}$

Answer: b



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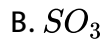
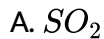
3. A substance on treatment with dil H_2SO_4 liberates a colourless gas which produces (i) turbidity with baryts water and (ii) terms acidified dichromate solution green .The reaction inducates the presencve of



Answer: c

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4. Cone H_2SO_4 on addition to dry KNO_3 gives down fumes of :



Answer: d

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5. A white metal sulphide soluble in water is

A. CuS

B. Na_2S

C. PbS

D. ZnS

Answer: b



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6. A salt having BO_3^{3-} on burning with cone H_2SO_4 gives Edge flame

A. Green

B. yellow

C. Red

D. White

Answer: a

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7. KBr , on reaction with cone H_2SO_4 give reddish brown gas which bleaches moist limus paper .The evolved gas is

A. Bromine

B. Mixture of bromine and HBr

C. HBr

D. NO_2

Answer: a

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8. An inorganic salt when heated evolves coloured gas which bleaches moist limus paper .The evolves gas is

A. NO_2

B. SO_2

C. N_2O

D. I_2

Answer: a



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9. The colour developed when sodium sulphide is added to sodium nitroprusside is

A. Violet

B. yellow

C. Red

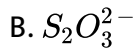
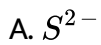
D. Black

Answer: a



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10. Using dil HCl, which of the following radical cannot be confirmed



Answer: c



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11. The solution of a chemical compound X reacts with $AgNO_3$ solution to form a white precipitate of Y which dissolves in NH_4OH to give Z. When Z is treated with dil HNO_3 , Y reappears. The chemical compound X can be

- A. $NaCl$
- B. CH_3Cl
- C. $NaBr$
- D. NaI

Answer: a

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12. Precipitate of Na_2CO_3 extract is made for acid radical analysis because

- A. All anions react with Na to give water soluble compound

B. Na is more reactive

C. Na_2CO_3 is water soluble

D. None of the above

Answer: a

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13. H_2S and SO_2 can be distinguished by

A. Limus paper

B. MnO_4^\ominus

C. $Pb(CH_3COO)_2$

D. HCl

Answer: c

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14. Two test tubes containing a nitrate and a bromide are treated separately with H_2SO_4 brown fumes evolved are passed over water. The water will be coloured by vapours evolved from the test tube containing

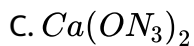
- A. Nitrate
- B. Bromide
- C. Both (a) and (b)
- D. None of these

Answer: b

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15. A solution of white crystals with a soluble of Na_2CO_3 . The action of concentrated H_2SO_4 on the crystals yields a brown gas. The crystals are of

- A. $NaNO_3$
- B. KCl

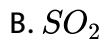
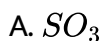


Answer: d



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16. A white precipitate insoluble in cone HNO_3 is formed when aqueous solution of X $NaOH$ treated with barium chlorid and bromic water .The X is



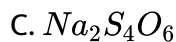
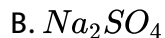
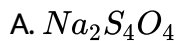
D. None of these

Answer: b



[View Text Solution](#)

17. Aqueous solution of $Na_2S_2O_3$ on reaction with Cl_2 water gives

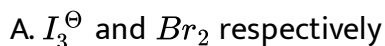


Answer: b



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18. When CS_2 layer containing both Br_2 and I_2 is shaken with excess of Cl_2 water the violet colour due to I_2 disappearance of violet colour and appearance of pale yellow colour is due to the formation of



C. KI and $BrCl$ respectively

D. I^\ominus and Br^\ominus , respectively

Answer: b

 [View Text Solution](#)

19. Which of the following pair of acid radicals can be distinguished by using dil H_2SO_4 ?

A. $C_2O_4^{2-}$ and NO_3^\ominus

B. $NO_3O_4^\ominus$ and NO_2^\ominus

C. Cl^\ominus and Br^\ominus

D. HCO_3^\ominus and CO_3^{2-}

Answer: b

 [View Text Solution](#)

20. The aqueous solution of salt gives white ppt with lead acetate solution which is insoluble in water and nitric acid. The salt contains



Answer: d



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21. Some pale green crystals are strongly heated. The gases then evolved are passed into a container surrounded by ice and then through a solution of acidified $KMnO_4$. The $KMnO_4$ is decolorised, a waxy white solid is formed in the ice container. This is dissolved in water. The solution will

A. Give a precipitate with silver nitric solution

- B. Give a precipitate with barium chloride solution
- C. Turn red litmus blue
- D. Give blue colour with starch solution

Answer: b

 [View Text Solution](#)

22. For testing sodium carbonate solution for the presence of sulphate ions as impurities one should add :

- A. Excess hydrochloric acid and silver nitrate solution
- B. Excess sulphuric acid and silver nitrate solution
- C. Excess nitric acid and silver nitrate solution
- D. Excess hydrochloric acid and barium chloride solution

Answer: d

 [View Text Solution](#)

23. Salt A $\xrightarrow{\text{Layer test}}$ If reddish brown layer come first , then

A. Br^{\ominus} present

B. Br^{\ominus} absent

C. Cl^{\ominus} present

D. I^{\ominus} present

Answer: a



[View Text Solution](#)

24. $CaCO_3(s) + CH_3COOH \xrightarrow{Na_2C_2O_4 \text{ solution}} ?$

Comment on the product of this reaction

A. No reaction

B. White ppt of $(CH_3COO)_2Ca$ is obtained

C. White ppt of CaC_2O_4 is formed

D. No ppt is obtained

Answer: c



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Exercises (Single Correct) Part-B(Dry Test)

1. The compound formed in the borax berax test of Cu^{2+} in oxidising flame is

A. Cu

B. $CuBO_2$

C. $Cu(BO_2)_2$

D. none of these

Answer: c



[View Text Solution](#)

2. Potassium chromate solution is added to an aqueous solution of a metal chloride. The precipitate thus obtained is 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. Golden yellow

Answer: b



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3. Which gives violet colour with borax ?

- A. NH_4^{\oplus}
- B. K^{\oplus}
- C. Mg^{2+}

D. Al^{3+}

Answer: b



[View Text Solution](#)

4. Which gives violet colour with borax?

A. Fe

B. Pb

C. Co

D. Mn

Answer: d



[View Text Solution](#)

5. A green mass is formed in the charcoul cavity test when a colourless salt (X) is fused with cobalt nitrate (X) may contain

- A. Aluminium
- B. copper
- C. Barium
- D. Zinc

Answer: d



[View Text Solution](#)

6. Carbonates of Ba, Sr and Ca are

- A. White
- B. Blue
- C. Green
- D. Yellow

Answer: a



[View Text Solution](#)

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

A. Cr

B. Ni

C. Pb

D. Mn

Answer: c



[View Text Solution](#)

8. Which metal gives a blue bead when its salt is heated with Na_2CO_3 solid and $Co(NO_3)_2$ on a charcoal piece?

A. Cu

B. Mg

C. Al

D. Zn

Answer: c



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9. A minute of copric salt is based on borax bead in reducing flame of bunsen burner, the colour of bead after cooling will be

A. Blue

B. Red

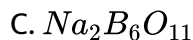
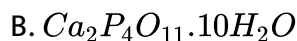
C. Colourless

D. Green

Answer: d

 [View Text Solution](#)

10. Aqueous solution of a salt (Y) is alkaline to litmus. On strong heating it swells up to give a glassy material. When conc. H_2SO_4 is added to a hot concentrated solution of (Y) white crystals of a weak acid separate out. Hence, the compound (Y) is



Answer: d

 [View Text Solution](#)

Exercises (Single Correct) Part-C (Analysis Of Cations)

1. Strongly acidified solution of barium give a white precipitate with which did not dissolve even after large addition of water

- A. Sodium phosphate
- B. Sodium carbonate
- C. Sodium sulphate
- D. Sodium chloride

Answer: c



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2. In the precipitate of the iron group in qualitative analysis ammonium chloride is added before adding ammonium hydroxide to

- A. Decreases concentration of OH^{\ominus} ions
- B. Prevent interference by phosphate ions
- C. increases concentration of Cl^{\ominus} ions

D. Increases concentration of NH_4^+ ions

Answer: a



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3. H_2S gas on passing through an alkline solution , forms a white precipitate .The solution contains ions of

A. Pb

B. Zn

C. Cu

D. Ni

Answer: b



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4. Yellow ammonium sulphide solution is a soluble reagent used for the separation of

- A. HgS and PbS
- B. PbS and Bi_2S_3
- C. Bi_2S_3 and CuS
- D. CdS and As_2S_3

Answer: d



[View Text Solution](#)

5. An orange red precipitate obtained by passing H_2S through an acidified solution of an inorganic salt indicates the presence of

- A. Cadmium
- B. Tin
- C. Antimony

D. Bismuth

Answer: c

 [View Text Solution](#)

6. Excess of concentrated sodium hydroxide can separate mixture of

A. Al^{3+} and Cr^{3+}

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

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

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

Answer: b

 [View Text Solution](#)

7. Which of the following sulphide has the maximum solubility product ?

A. HgS

B. PbS

C. CuS

D. MnS

Answer: d

 [View Text Solution](#)

8. Lead has been placed in qualitative group analysis 1st and 2nd because

A. It shown the valency one and two

B. it forms insoluble $PbCl_2$

C. It form lead sulphide

D. $PbCl_2$ is parially soluble in water

Answer: a

 [View Text Solution](#)

9. As_2S_3 is

- A. Black
- B. Yellow
- C. Orange
- D. White

Answer: d



[View Text Solution](#)

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

- A. $CaCl_2$
- B. $CdCl_2$
- C. $ZnCl_2$

D. $NaCl$

Answer: a



[View Text Solution](#)

11. The group II precipitate soluble in yellow ammonium sulphide may be

A. As, Sb, Sn

B. Ca, Hg, Bi, Cd

C. Both (a) and (b)

D. None of these

Answer: a



[View Text Solution](#)

12. Nitric acid is generally not used for preparation of original solution in analysis of basic radicals ,because it

- A. is oxidising agent
- B. is reducing agent
- C. forms insoluble nitrates
- D. forms soluble nitric

Answer: a



[View Text Solution](#)

13. The sulphide not soluble in hot dilute nitric acid is

- A. CuS
- B. ZnS
- C. CdS
- D. HgS

Answer: d



[View Text Solution](#)

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

- A. The solution is aqueous
- B. The solution is acidic
- C. The solution is dilute acidic
- D. Any of the above solution is present

Answer: a



[View Text Solution](#)

15. To a solution of a substance gradual addition of ammonium hydroxide result in a black precipitate which does not dissolve in excess

of NH_4OH however when HCl is added to the original solution a white precipitate is formed .The solution contained

- A. Lead salt
- B. Silver salt
- C. Mercurous salt
- D. Copper salt

Answer: c



[View Text Solution](#)

16. A compound is soluble in water if ammonia is added to aqueous solution of the compound, a brown precipitate appears which is soluble in dil HCl .The compound has

- A. Aluminium
- B. Zinc
- C. Iron

D. Cadmium

Answer: c



[View Text Solution](#)

17. A light green salt soluble in water gives black precipitate on passing H_2S which dissolves readily in HCl . The metal ion present is

A. Co^{2+}

B. Fe^{2+}

C. Ni^{2+}

D. Ag^{\oplus}

Answer: b



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18. All ammonium salt liberate ammonia when

- A. Heated with HCl
- B. Heated with caustic soda
- C. Heated with H_2SO_4
- D. Heated with $NaNO_2$

Answer: d

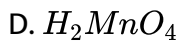


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19. Manganese salt + PbO_2 + *conc.* HNO_2 → The solution has purple colour

The colour is due to

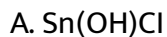
- A. $HMnO_4$
- B. A lead salt
- C. $Mn(NO_3)_2$



Answer: a

 [View Text Solution](#)

20. An orange precipitate of group II is dissolve in cone HCl the solution when treated with excess of water turn milky due to formation of



Answer: c

 [View Text Solution](#)

21. Which of the following solution gives precipitate with $Pb(NO_3)_2$ but not with $Ba(NO_3)_2$

- A. Sodium chloride
- B. Sodium sulphite
- C. Sodium nitrate
- D. Sodium hydrogen phosphate

Answer: a



[View Text Solution](#)

22. A white powder when strongly heated gives off brown fumes. A solution of this powder gives a yellow precipitate with a solution of KI when a solution of barium chloride is added to a solution of powder a white precipitate results. This white powder may be

- A. A solution sulphate

B. KBr or $NaBr$

C. $Ba(NO_3)_2$

D. $AgNO_3$

Answer: d

 [View Text Solution](#)

23. The ion that cannot be precipitate by both HCl and H_2S is

A. Pb^{2+}

B. Cu^{\oplus}

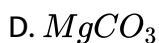
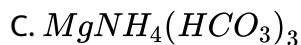
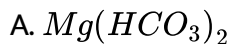
C. Ag^{\oplus}

D. Sn^{2+}

Answer: b

 [View Text Solution](#)

24. The presence of magnesium is confirmed in the qualitative analysis by the formation of a white crystalline precipitate of :

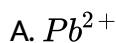


Answer: b



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25. In qualitative inorganic analysis phosphorus, if present is to be eliminated in the appropriate group in order to detect the radical :



D. Cd^{2+}

Answer: c



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26. Na_2CO_3 cannot be used in place of $(NH_4)_2CO_3$ for the precipitate of group V because

A. Na^{\oplus} interferes in the detection of group V

B. Concentration of CO_3^{2-} is very low

C. Na will react with acid radicals

D. Mg will be precipitate

Answer: d



[View Text Solution](#)

27. Disodium hydrogen phosphate is used in test :



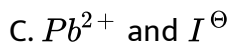
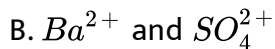
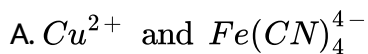
D. All of these

Answer: a



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28. Raddish - brown (chocolate) ppt. is formed with :



D. None of these

Answer: a



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29. Addition of SnCl_2 to HgCl_2 gives ppt. :

- A. white turning to grey
- B. Black turning to white
- C. white turning to red
- D. None of these

Answer: a



[View Text Solution](#)

30. To avoid the precipitate of hydroxide of Ni^{2+} , Co^{2+} , Zn^{2+} and Mn^{2+} along with these of Fe^{3+} , Al^{3+} and Cr^{3+} the third group solution should be

A. Heated with a few drop of cone HNO_3

B. Treated with excess of NH_4Cl

C. Conccotrated

D. None of these

Answer: b

 [View Text Solution](#)

31. Which give a white precipitate with a solution of $AgNO_3$ is white precipitate with dil H_2SO_4 and a green flame test ?

A. Copper chloride

B. Copper nitrate

C. Lead nitrate

D. Barium chloride

Answer: d

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32. In qualitative inorganic analysis of basic radicals ydochloric acid is preferred to nitric acid for preparing a solution of given substance .This is because :

- A. Nitrates are not decomposed to selphides
- B. Nitric acid contain nitrogen
- C. Hydrocholoric acid is not an oxidesing agent
- D. Choride are easly of converted to sulphides

Answer: c

 [View Text Solution](#)

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

A. Ca^{2+}

B. Ca^{2+} and Sr^{2+}

C. Ba^{2+} and Sr^{2+}

D. All the three

Answer: d

 [View Text Solution](#)

34. The reagent that distinguishes between silver and lead salt is

A. H_2S gas

B. dil. HCl solution after this dissolved in hot water

C. NH_4Cl (solid) + NH_4OH (solution)

D. NH_4Cl (solid) + $(NH_4)_2CO_3$ solution

Answer: b

 [View Text Solution](#)

35. 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 ions

- A. Changes from + 2 to + 3
- B. Changes from + 3 to + 2
- C. Changes from + 2 to + 4
- D. does not change

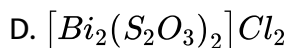
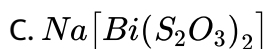
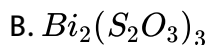
Answer: d



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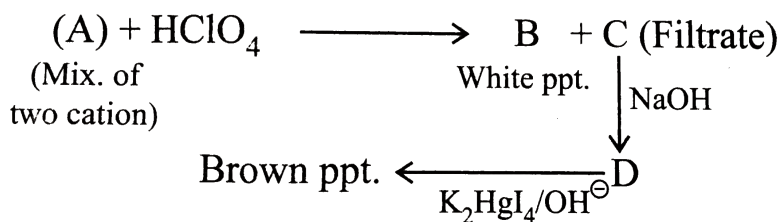
36. The product of reaction of an aq solution of Bi^{3+} salt with sodium thiosulphate gives

- A. BiS



Answer: b

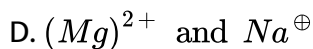
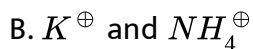
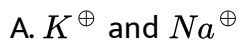
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The cations present in A are

37.

The cations present in A are



Answer: b

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38. Few drop of HNO_3 are added to group II before precipitating to group III in order to :

- A. Convert Fe^{2+} to Fe^{3+}
- B. Convert Fe^{3+} to Fe^{2+}
- C. ppt group III
- D. None of these

Answer: a

 [View Text Solution](#)

39. A reddish substance on heating gives off a vapour which condenses on the sides of the test tube and the substance turns blue if on cooling water

is added to the residue it turns to its original colour. The substance is

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

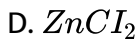
Answer: c



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40. An inorganic Lewis acid (X) fumes in moist air, and intensity of fumes increases when a red dipole in NH_4OH is brought near to it. An acidic solution of (X) on addition of NH_4Cl and NH_4OH gives a precipitate which dissolves in $NaOH$ solution. An acidic solution of (X) does not give precipitate with H_2S . Hence, the compound (X) is

- A. $FeCl_3$
- B. $AlCl_3$



Answer: b

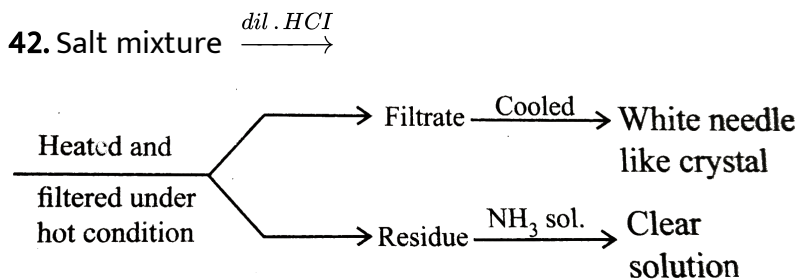
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41. A colourless (X) is soluble in water and also in alcohol and amies. ON string heating (X) gives a brown gas (Y) and a grey residue (X) dissolves in ammon to give a solution (Z) which gives silver mirror with aldehydes .A solution of (X) is easily reduced by iron (II) sulphide .A solution of (X) also gives a brick red precipitate with potassium dishronate solution .Hence , choose the correct qalternative

- | | | | |
|----|----------------------------|---------------|-------------------------------------|
| | X | Y | Z |
| A. | $\text{Pb}(\text{NO}_3)_2$ | NO_2 | Ag_2O |
| | X | Y | Z |
| B. | AgNO_3 | NO | $[\text{Ag}(\text{NH}_3)_2]^\oplus$ |
| | X | Y | Z |
| C. | AgNO_3 | NO_2 | Ag_2O |
| | X | Y | Z |
| D. | AgNO_3 | NO_2 | $[\text{Ag}(\text{NH}_3)_2]^\oplus$ |

Answer: d

 View Text Solution

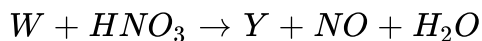
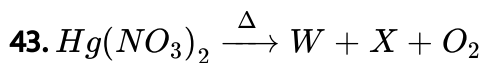


Salt is consisting of cation

- A. Pb^{2+} and Hg^{2+}
- B. Pb^{2+} and Hg_2^{2+}
- C. Pb^{2+} and Ag^{\oplus}
- D. Pb^{2+} , Hg_2^{2+} and Ag^{\oplus}

Answer: c

 View Text Solution



- | | | | | |
|----|----|-------------------------------|-----------------------------------|--|
| | W | X | Y | Z |
| A. | Hg | N ₂ O | Hg(NO ₃) ₂ | Na ₂ [Hg(S ₂ O ₃) ₂] |
| | W | X | Y | Z |
| B. | Hg | NO | Hg(NO ₃) ₂ | Na[Hg(S ₂ O ₃) ₂] |
| | W | X | Y | Z |
| C. | Hg | NO ₂ | Hg(NO ₃) ₂ | Na ₂ [Hg(S ₂ O ₃) ₂] |
| | W | X | Y | Z |
| D. | Hg | N ₂ O ₃ | Hg(NO ₃) ₂ | Na ₃ [Hg(S ₂ O ₃) ₂] |

Answer: c

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Exercises (Single Correct) Part-D (Miscellaneous)

1. Prussian blue is formed when :

- A. Ferrous sulphate reacts with $FeCl_3$
- B. Ferric sulphate reacts with $K_4[Fe(CN)_6]$
- C. Ferrous ammonium sulphate reacts with $FeCl_3$
- D. Ammonium sulphate reacts with $FeCl_3$

Answer: b

 [View Text Solution](#)

2. A metal salt solution forms a yellow precipitate with potassium chromate in acetic acid, a white precipitate with dil sulphuric acid but gives no precipitate with sodium chloride or iodate. The white precipitate obtained when sodium carbonate is added to the metal salt solution consists of

- A. Lead carbonate
- B. basic lead carbonate
- C. Barium carbonate

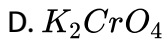
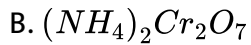
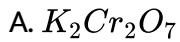
D. Strontium carbonate

Answer: c



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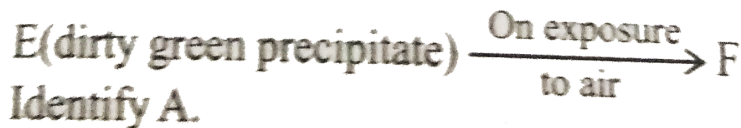
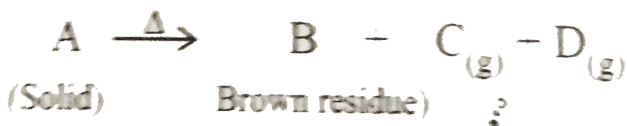
3. Chemical volcano is produced on heating



Answer: b



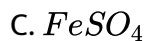
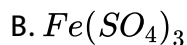
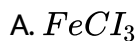
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Identify A.

Identify A.

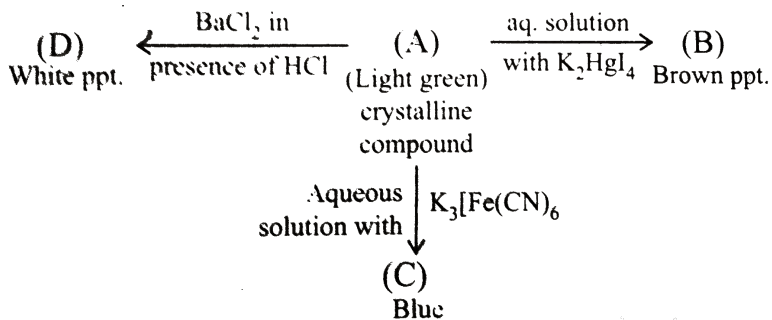
4.



D. All are correct

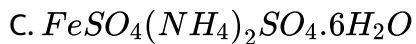
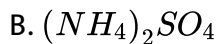
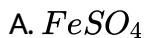
Answer: c

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5.

Identify A

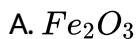
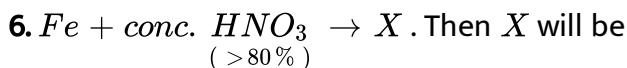


D. All are correct

Answer: c



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B. FeO

C. Fe_3O_4

D. None of these

Answer: c

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Exercises (Assertion-Reason)

1. Assertion :When H_2S is passed through a solution of $CuSO_4$ no precipitate of CuS is obtain until the solution is acidified with HCl

Reason: The solution products constant of CuS is not so high as to require a high concen tration of S^{2-} for the precipitate of CuS

A. If both (A) and (B) are correct and (R) is the correct explqanation of

(A)

- B. If both (A) and (B) are correct but (R) is not the correct explanation of (A)
- C. If (A) is correct ,but (R) is incorrect
- D. If (A) is incorrect ,but (R) is correct

Answer: d

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

Reason : $[Ag(NH_3)_2]^{\oplus}$ decomposes in the presence of HNO_3

- A. If both (A) and (B) are correct and (R) is the correct explanation of (A)
- B. If both (A) and (B) are correct but (R) is not the correct explanation of (A)
- C. If (A) is correct ,but (R) is incorrect

D. If (A) is incorrect ,but (R) is correct

Answer: a

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3. Assertion : A concentrated solution of $BiCl_3$ can be easily diluted to any extent with water

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

A. If both (A) and (B) are correct and (R) is the correct explanation of

(A)

B. If both (A) and (B) are correct but (R) is not the correct

explanation of (A)

C. If (A) is correct ,but (R) is incorrect

D. If (A) is incorrect ,but (R) is correct

Answer: c



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

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

- A. If both (A) and (B) are correct and (R) is the correct explanation of (A)
- B. If both (A) and (B) are correct but (R) is not the correct explanation of (A)
- C. If (A) is correct ,but (R) is incorrect
- D. If (A) is incorrect ,but (R) is correct

Answer: b



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5. Assertion : The blue precipitate formed by the action of $K_4[Fe(CN)_6]$ on Fe^{3+} and by that of $K_2[Fe(CN)_6]$ on Fe^{2+} have the same composition

Reason : $[Fe(CN)_6]^{3-}$ oxidises Fe^{2+} to Fe^{3+} and itself gets reduced to $[Fe(CN)_6]^{4-}$.

A. If both (A) and (B) are correct and (R) is the correct explanation of

(A)

B. If both (A) and (B) are correct but (R) is not the correct explanation of (A)

C. If (A) is correct ,but (R) is incorrect

D. If (A) is incorrect ,but (R) is correct

Answer: a



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6. Assertion :In the brown ring test for mixture through we start with $Fe^{II}SO_4$, we end up with $[Fe(H_2O)_3NO]SO_4$ in which iron is in the +1 oxidation states

Reason : No transfers its odd electrons to iron (II)

A. If both (A) and (B) are correct and (R) is the correct explanation of

(A)

B. If both (A) and (B) are correct but (R) is not the correct explanation of (A)

C. If (A) is correct ,but (R) is incorrect

D. If (A) is incorrect ,but (R) is correct

Answer: a



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7. Assertion : Br^{\ominus} ions do not interfere in the chromyl chloride test for chlorides

Reason : A bromide on oxidation with $K_2Cr_2O_7$ concentrates H_2SO_4 liberates Br_2 which dissolve in $NaOH$ to give a colourless solution

A. If both (A) and (B) are correct and (R) is the correct explanation of

(A)

B. If both (A) and (B) are correct but (R) is not the correct explanation of (A)

C. If (A) is correct ,but (R) is incorrect

D. If (A) is incorrect ,but (R) is correct

Answer: a



[View Text Solution](#)

8. Assertion : When a solution of Na_2ZnO_2 is acidified with dilute HCl and reacted with H_2S a precipitate of ZnS is formed

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

A. If both (A) and (B) are correct and (R) is the correct explanation of

(A)

B. If both (A) and (B) are correct but (R) is not the correct explanation of (A)

C. If (A) is correct ,but (R) is incorrect

D. If (A) is incorrect ,but (R) is correct

Answer: d



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9. Assertion : $Zn(OH)_2$ dissolve in an excess of an $NaOH$ n solution as well as NH_4OH solution

Reason : $Zn(OH)_2$ forms the soluble zincate salt in these alkline

- A. If both (A) and (B) are correct and (R) is the correct explqanation of (A)
- B. If both (A) and (B) are correct but (R) is not the correct explqanation of (A)
- C. If (A) is correct ,but (R) is incorrect
- D. If (A) is incorrect ,but (R) is correct

Answer: c

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Exercises (Integer) (Naming And Terminology)

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

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2. How many compounds liberate NH_3 on heating from the following ?

$(NH_4)_2SO_4$, $(NH_4)_2CO_3$, NH_4Cl , NH_4NO_3 , $(NH_4)_2Cr_2O_7$

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3. How many water molecule(s) is/are present in microcomics salt ?

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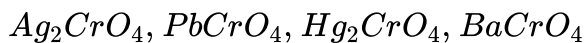
4.

Na_2SO_3 , $NaCl$, $Na_2C_2O_4$, Na_2HPO_4 , Na_2CrO_4 , $NaNO_2$, CH_3CO_2Na

are separately treated with $AgNO_3$ solution in how many cases is/are white ppt obtained ?

 [View Text Solution](#)

5. Find the number of compounds which have yellow colour ppt from the given compounds :



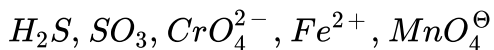
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6. Find the number of ion which are identified by dil. HCl from the following :



 [View Text Solution](#)

7. Find the number of reducing agents from the following



 [View Text Solution](#)

8. How many water of crystallisation is/are present in the ore camallite?

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9. $BO_3^{3-} + Conc. H_2SO_4 + CH_3 - CH_2 - OH \xrightarrow[\text{Green flame}]{\text{ignite}} (A)$. What is

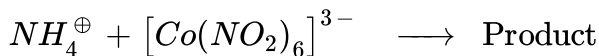
the oxidation number of central atom that is responsible for green in compound (A) ?

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10. Na_2SO_3 , $Na_2S_2O_3$, Na_2CO_3 , Na_2CrO_4 are separately treated with $AgNO_3$ solution in how many cases is/are red ppt obtained ?

 [View Text Solution](#)

11. In how many of the following reactions, one of the products is obtained as a yellow precipitate ?



 [View Text Solution](#)

12. A solution of Hg^{2+} ion on treatment with a solution of cobalt (II) throcyanate gives rise to a deep blue crystalline precipitate .Then the coordination number of mercury in the deep blue coloured compound is

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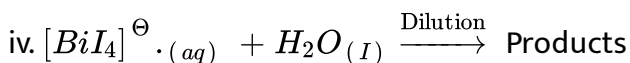
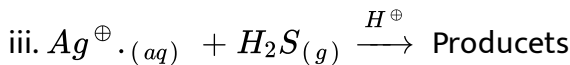
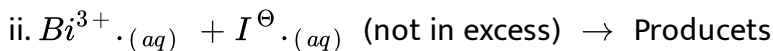
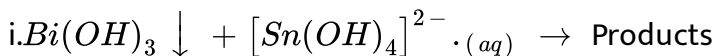
13. How many water moleculer(s) is/are presents in compoiund which in using in borax bead test?

 [View Text Solution](#)

14. $Fe^{2+} \cdot (aq) + NO_3^{\ominus} \cdot (aq) + H_2SO_4(conc.) \rightarrow$ Brown ring .The oxidation number of iron in brown ring complex is

 [View Text Solution](#)

15. In how many of the following reactions, one of the products is obtained is a black precipitate ?



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Exercises (Fill In The Blanks)

1. Reagent used to test Ni^{2+} ion is (a)_____.

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2. $Cr(OH)_3$ is made soluble in NaOH in presence of _____ (a) _____ when (b) _____ of _____ (c) _____ colour is formed and gives yellow ppt. of (d) _____ when (e) _____ is added.



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3. $Fe(OH)_3$ and $Al(OH)_3$ ppt. can be separated by (a) _____ when (b) _____ becomes soluble due to the formation of (c) _____ and (d) _____ remain insoluble.



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4. If orange turbidity appears on dilution with H_2O of the solution in dil HCl, it is due to (a) _____ and (b) _____ ion is assumed confirmed.



[View Text Solution](#)

5. Copper sub-group ppt. and arsenic salt -group ppt. are separated using (a) ____.

 [View Text Solution](#)

6. $PbCl_2$ is soluble in (a) ____ . $AgCl$ is soluble in (b) ____ white Hg_2Cl_2 is (c) __ by NH_3

 [View Text Solution](#)

7. Cd^{2+} and Cu^{2+} are separated by (a) __ formation using (b) __ in which (c) is more stable than (d) ____ . On passing H_2S gas (e) ____ . Is precipitate.

 [View Text Solution](#)

8. Precipitate of Cd^{2+} and Cu^{2+} takes place in presence of (a) ___ by (b) ___.

 [View Text Solution](#)

9. NH_4Cl is added along with NH_4OH is group (a) ___ to (b) ___ concentration of (c) ___.

 [View Text Solution](#)

10. Separation of basic radicals is based on (a) ___ and (b) ___.

 [View Text Solution](#)

11. Gas that turns lime water milky and acidified $K_2Cr_2O_7$ green is (a) ___.

 [View Text Solution](#)

12. NH_4 , SCN gives red colour with (s) ___ due to the formation of (b) ____.

 [View Text Solution](#)

13. $HgCl_2$ gives orange ppt , with (a) ___, which dissolves in excess of it forming (b) ___ called (c) ____.

 [View Text Solution](#)

14. $Al(OH)_3$ is precipitate if it produces (a) ___ is (b) ___ that K_{sp}

 [View Text Solution](#)

15. $PbSO_4$ is soluble in (a) _____ due to formation of (b) _____.

 [View Text Solution](#)

16. A reagent that can detect any of Cu^{2+} , Fe^{3+} , Zn^{2+} and Cd^{2+} is _____(a)_____.

 [View Text Solution](#)

17. Fe^{2+} gives blue colour, called(a)___ with (b)___white Fe^{2+} gives blue colour, called(c)___ with (d)_____.

 [View Text Solution](#)

18. Ferric alum is the indicate in the tatration of Ag^{\oplus} with SCN^{\ominus} when (a)___ colour appears of the end point .

 [View Text Solution](#)

19. FeC_2O_4 can decolorise acidified $KMnO_4$ due to the oxidation of (a) _____ and (b)_____.



[View Text Solution](#)

20. Acidified $KMnO_4$ can be decolourised by (a)_____.



[View Text Solution](#)

21. Iron (II)sulphide gives foul smell of (a)_____.



[View Text Solution](#)

22. AgBr is soluble in hypo forming (a) _____.



[View Text Solution](#)

23. NO_3^\ominus is detected by (a) _____ when (b) _____ is formed on the addition of $FeSO_4$ and cone H_2SO_4



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24. Cl^- is confirmed by (a) ____.

 [View Text Solution](#)

25. Addition of one drop of HNO_3 in group (III) analysis is to (a) ____.

 [View Text Solution](#)

26. Reagent that can detect any of Fe^{3+} , Co^{2+} and Cu^{2+} is (a) ____.

 [View Text Solution](#)

27. While testing borate, green edged flame is due so formation of (a) ____.

 [View Text Solution](#)

28. When SO_2 is passed into suspension of $CaSO_3$ in water (a) ____ is formed.

 [View Text Solution](#)

29. Alkaline NH_4^+ salt give brown ppt with K_2HgI_4 brown ppt is called ____ (a) ____.

 [View Text Solution](#)

30. Even in the absence of group II, colloidal yellowish ppt appears on passing H_2S gas, it be due to the presence of (a) ____.

 [View Text Solution](#)

31. Hypo gives (a) ___ ppt. with $AgNO_3$ which changes to (b) ____.

 [View Text Solution](#)

32. Reddish brown colouration when neutral $FeCl_3$ is added to the CH_3COO^\ominus aq solution is due to the formation of (a) ____.

 [View Text Solution](#)

33. As_2S_3 is solution in $(NH_4)_2S_2$ (yellow ammonium sulphide) due to the formation of (a) ____.

 [View Text Solution](#)

34. On heating the salt with NH_4NO_3 and ammonium molybdate, formation of yellow ppt indicates the presence of (a) ____ or (b) ____.

 [View Text Solution](#)

35. Cu^{2+} gives white ppt. of (a) ____ with (b) ____ and deep blue colour of ____ (c) ____ with (d) ____.



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36. AgCl is soluble in (a)___ and Ag^{\oplus} is present in (b)_____.



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37. Hg_2Cl_2 aprecipitate if (a) ___ is greater than $K_{sp}(Hg_2Cl_2)$.



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38. Sodium carbonate and mixture are taken in (a)___ ratio white perparing sodium carbonate extract



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39. $BaBr_2$ in aq solution give yellow ppt ,with (a)___ as well as with (b)___.

 [View Text Solution](#)

40. Yellow ppt of (a)_____ is formed when $CoCl_2$ reacts with excess of KNO_2 in presence of CH_3COOH .

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41. Microcosmic salt bent test in which $Na(NH_4)H_2PO_4 \cdot 4H_2O$ is first dehydrated which forms sodium metaphosphate ($NaPO_3$) as colourless head which reacts with metals oxide giving coloured head .This test is soluble for Cu,Cr and Co .The blue heated with CuO and CoO are due the formation of ___and ___white green head with Cr_2O_3 is due to the formation of ___.

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42. Th esodium carbobate bead test test is which Na_2CO_3 is along instead of barax it is solution to chromiam and ___.

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Exercises (True And False)

1. Turnbull's and Prussian's blue respectively are $KFe^{II}[Fe^{III}(CN)_6]$ and $KFe^{II}(Fe^{III}(CN)_6)$

 [View Text Solution](#)

2. If K_{sp} of $M(OH)_3$ is 1×10^{-12} then $0.001M$ M^{2+} is precipitated in a $pH > 9$

 [View Text Solution](#)

3. There is ppt. of solute AB if its product is greater than K_{sp} value i.e. $[A][B] > K_{sp}$

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4. When Cl_2 gas is passed into a mixture containing Br^\ominus and I^\ominus and $CHCl_3$, I_2 (voilet) first appear $CHCl_3$ layer.

 [View Text Solution](#)

5. When H_2S gas is passed into aq $ZnCl_2$ solution white ppt of ZnS is obtained.

 [View Text Solution](#)

6. Dilute H_2SO_4 can be used in group of dil HCl

 [View Text Solution](#)

7. NH_4Cl can be replaced by $(NH_4)_2SO_4$ in group III.

 [View Text Solution](#)

8. Alkaline solution of NH_4Cl gives ppt with K_2HgI_4

 [View Text Solution](#)

9. When KNO_2 and CH_2COOH is added as $CoCl_2$ solution, yellow ppt of $K_4[Cu(NO_2)_6]$ is formed.

 [View Text Solution](#)

10. $K_4[Fe(CN)_6]$ is used to test Cu^{2+} , Fe^{2+} , Zn^{2+} , Cd^{2+}

 [View Text Solution](#)

11. Hg_2Cl_2 is black ened by NH_3 due to formation of iodide of millon's base

 [View Text Solution](#)

12. White ppt of $PbCl_2$ is soluble in aq NH_3 .

 [View Text Solution](#)

13. If acidified solution of $K_2Cr_2O_7$ turn green on addition of a salt three salt may contain Fe^{2+} .

 [View Text Solution](#)

14. In group II, Formation of whichsh turbidity on dilution with H_2O indicate Sb^{3+} .

 [View Text Solution](#)

15. $NaOH$ can be used to seprate $Al(OH)_3$ and $Zn(OH)_2$.

 [View Text Solution](#)

16. NH_4SCN can be used to make distinction between Cu^{2+} and Co^{2+} .

 [View Text Solution](#)

17. Yellow ammonium sulphide (YAS) can be used to separate SnS and As_2S_3 .

 [View Text Solution](#)

18. $NaOH$ can be used to separate $Al(OH)_3$ and $Zn(OH)_3$.

 [View Text Solution](#)

19. $AlCl_3$ is soluble in excess of $NaOH$ forming sodium metaaluminate $Na[Al(OH)_4]$.

 [View Text Solution](#)

20. $BaBr_2$ gives yellow ppt with $AgNO_3$ as well as with K_2CrO_4 .

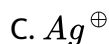
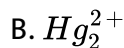
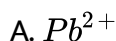


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Exercises Archives (Linked Comprehension)

1. An aqueous solution of a mixture of two inorganic salt, when treated with dilute HCl, gave a precipitate (P) and a filtrate (Q). The precipitate P was found to dissolve in hot water. The filtrate (Q) remained unchanged, white precipitate was formed with H_2S in a dilute mineral acid medium. However, it gave a precipitate (R) with H_2S in an ammoniacal medium. The precipitate R gave a coloured solution (S) when treated with H_2O_2 in an aqueous $NaOH$ medium.

The precipitate P contains .



D. Hg^{2+}

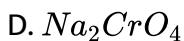
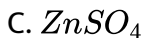
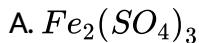
Answer: a



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2. An aqueous solution of a mixture of two inorganic salt, when treated with dilute HCl, gave a precipitate (P) and a filtrate (Q). The precipitate P was found to dissolve in hot water. The filtrate (Q) remained unchanged, white precipitate with H_2S in a dilute mineral acid medium. However it gave a precipitate (R) with H_2S in an ammoniacal medium. The precipitate R gave a coloured solution (S) when treated with H_2O_2 to an aqueous $NaOH$ medium.

The coloured solution S contains



Answer: d



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Exercises Archives (Multiple Correct)

1. The reagents NH_4Cl and NH_3 will precipitate :



Answer: b,c



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2. Which of the following statement is/are correct with reference to the ferrous and ferric ions?

- A. Fe^{3+} gives brown colour with potassium ferricyanide
- B. Fe^{2+} gives blue precipitate with potassium ferricyanide
- C. Fe^{3+} gives red colour with potassium thlocyanate
- D. Fe^{2+} gives brown colour with ammonium thiocyatute

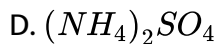
Answer: b,c



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3. A solution of coloured salt if bolling with excess NaOH produces a non flammable gas .The gas evolvuration coases after sometime .Upon addition of Zn dust to the same solution , the gas evolation restart .The colourless salt (s) H is/are

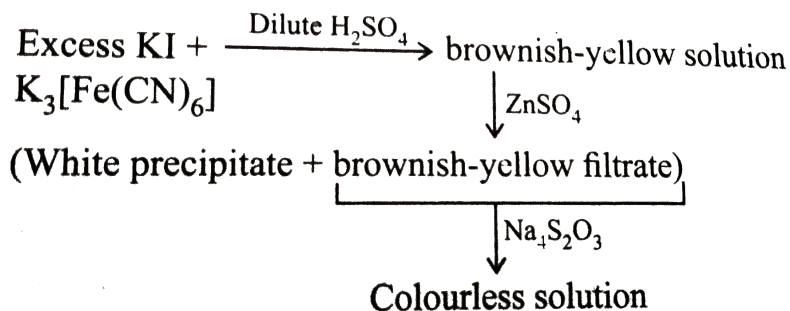
- A. NH_4NO_3



Answer: a,b

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4. For the given reaction, which of the statement (s) is (are) true?



A. The first reaction is a redox reaction

B. White precipitate is $Zn_4[Fe(CN)_6]_2$

C. Addition of filtrate to solution gives blue colour

D. When precipitate is soluble in $NaqOH$ solution

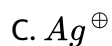
Answer: a,c,d



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Exercises Archives (Single Correct)

1. The ion that be precipitate by both HCl and H_2S is



Answer: c



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2. The pair of compound which cannot exist together in solution is

A. NaHCO_3 and NaOH

B. Na_2CO_3 and NaHCO_3

C. Na_2CO_3 and NaOH

D. NaHCO_3 and NaCl

Answer: a

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3. The compound insoluble in acetic acid is

A. calcium oxide

B. calcium carbonate

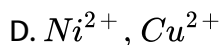
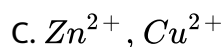
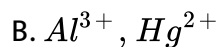
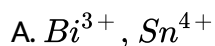
C. calcium oxalate

D. calcium hydroxide

Answer: c

 [View Text Solution](#)

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

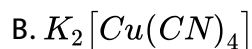
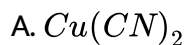


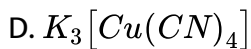
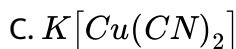
Answer: a



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5. Which compound is formed when excess of KCN is added to an aqueous solution of copper sulphate ?





Answer: d

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6. An aqueous solution of $FeSO_4$, $Al_2(SO_4)_3$ and chrome alum is heated with excess of Na_2O_3 and chrome alum is heated with excess of Na_2O_2 and filtered. The materials obtained are

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

Answer: c

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

A. Hg_2^{2+} salt

B. Cr^+ salt

C. Ag^{\oplus} salt

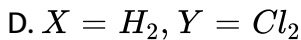
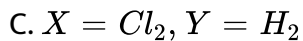
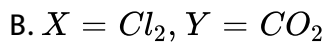
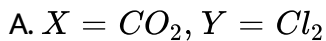
D. Pb^{2+} salt

Answer: d



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8. A gas X is passed through water to form a saturated solution. The aqueous solution on treatment with magnesium ribbon also dissolves magnesium ribbon with the evolution of a colourless gas Y. Identify X and Y.

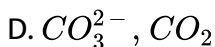
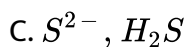
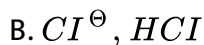
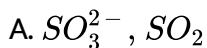


Answer: c

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9. $[X] + H_2SO_4 \rightarrow [Y]$ colourless gas with irritating smell

$[Y] + H_2SO_4 + K_2Cr_2O_7 \rightarrow$ Green solution $[X]$ and $[Y]$ are



Answer: a

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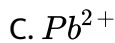
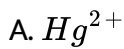
10. A sodium salt of an unknown anion when treated with $MgCl_2$ gives white precipitate only on boiling. The anion is



Answer: b,c

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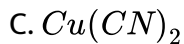
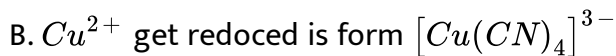
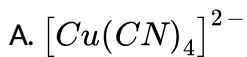
11. A metal nitrate reacts with KI to give a black precipitate which on addition of excess of KI converted to an orange colour solution. The cation of metal nitrate is



Answer: b,c

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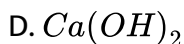
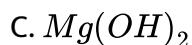
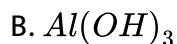
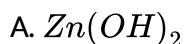
12. $CuSO_4$ decolourises on addition KCN , the produce is



Answer: d

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13. A solution when diluted with H_2O And boiled gives a white precipitate .On the addition of excess NH_2CINH_4OH the volume of the precipitate decreases leavingg behind a white ge3lationtious precipitate identify the precipitate which dissolves in NH_4OH / NH_4Cl :

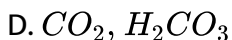
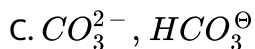
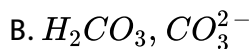
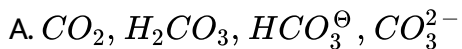


Answer: a



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14. The species presents in the solution when CO_2 is dissolves in water are

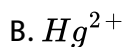


Answer: a



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15. 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



D. Co^{2+}

Answer: b,c

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

A. CuS and HgS

B. MnS and CuS

C. MnS and NiS

D. NiS and HgS

Answer: a

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17. Sulphide ores are common for the metals

A. *Ag, Cu* and *Pb*

B. *Ag, Cu* and *Sn*

C. *Ag, Mg* and *Pb*

D. *Al, Cu* and *Pb*

Answer: a



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18. Upon treatment with ammonical H_2S the metal ion that precipitate as sulphide is

A. *Fe(III)*

B. *Al(III)*

C. *Mg(II)*

D. *Zn(II)*

Answer: d



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19. Roasting of sulphides gives the gas X as a by product .The is a colourless gas with choking smell of burnt sulphur and cause great damage to respectively orange as a result of acid rain its aqueous solution is acidic , acts as a reducing agent and its acid has never isolated .The gas X is

A. CO_2

B. SO_3

C. H_2S

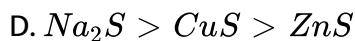
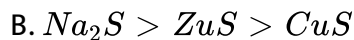
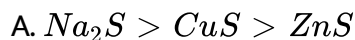
D. SO_2

Answer: d



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20. Identify the correct order solubility in apocous medium



Answer: b,c



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Exercises Archives (Assertion-Reasoning)

1. Statement - I: A very dilute acidic solution of Cd^{2+} and Ni^{2+} gives yellow precipitate of CuS on passing H_2S

Statement - II : The solubility product of CdS is more than that of NiS

- A. Statement - I is true ,Statement - II is also true , Statement - II is the correct explanation for Statement - I
- B. Statement - I is true ,Statement - II is true , Statement - II is the correct explanation for Statement - I
- C. Statement - I is true ,Statement - II is false
- D. Statement - I is false ,Statement - II is true

Answer: a

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2. Statement - I : Sulphate is estimated as $BaSO_4$ not as $MgSO_4$

Statement - II : ionic radius of Mg^{2+} is smaller than of Be^{2+} :

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1. Among PbS , CuS , HgS , MnS , AgS , NiS , CoS , Bi_2S_3 and SnS_2 the total number of BLACK coloured sulphides is

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Exercises Archives (Fill In The Blanks Ype)

1. If metal ions of group II are precipitated by NH_4Cl and NH_4OH without prior oxidation by concentrated HNO_3 ____ is not completely precipitated

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2. The formula of the deep red liquid formed on warming dichromate with KCl in concentrated sulphuric acid is ____.

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Exercises Archives (True/False)

1. The addition of ammonium chloride to a solution containing ferric and magnesium ions is essential for selective precipitation of ferric hydroxide by aqueous ammonium

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2. From the solution containing copper (+2) and zinc (+2) ions copper can be selectively precipitated using sodium sulphide.

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Exercises Archives (Subjective)

1. The precipitation of second group sulphides qualitative analysis is carried out with hydrogen in the presence of hydrochloric acid but not with nitric acid. Explain.



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2. A white amorphous A on heating yields a colourless, non-combustible gas B a solid C .The latter compound assumes a yellow colour on heating and changes to white on cooling C dissolve in dilute hydrochloric acid and the resulting solution gives a white precipitate with $K_4Fe(CN)_6$ solution .A dissolve in dilute HCl with the evolution of gas , which is identical in all respect B turns lime milky , but the milkiness disappears with the continuous passage of gas solution of A as obtained above gives a white precipitate D on the addition of excess of NH_4OH and passing H_2S another portion of the solution gives initially a white precipitate E on the addition of NaOH solution , which dissolves on further addition of base , identify the compounds A,B,C,D and E `



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3. Explain the following in not more than two sentences A solution of $FeCl_3$ in water gives a brown precipitate on standing



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4. Compound A is the light crystalline solid .IT gives the following tests:

i. IT dissolves in dilute sulphuric acid, NO gas is produced

ii. A drop of MnO_4 is added to the above solution .The pink colour disappears

iii. Compound A is heated strongly .Gases B and C , with pungent smell , come out A brown D is left behind

iv . The gas mixture (B and C) is passed into a dchromate solution .The solution turn green

v. The green solution from step (iv) gives a white precipitate E with a soluttion of barium nitrate .

vi. Residue D from step (iii) is heated on charcoal in a reducing flame it gives a magnetic subsytance .Name the compounds A,B,C, D and E



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5. When 16.8g of white solid X was heated, 4.4g of acid gas A that turned lime water milky was driven off together with 1.8g of a gas B which condensed to a colourless liquid. The solid that remained Y dissolved in water to give an alkaline solution, which with excess barium chloride solution gave a white precipitate Z. The precipitate effervesced with acid giving carbon dioxide. Identify A, B and Y and write the equation for the decomposition of X.



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6. What happens when

- i. Hydrogen is bubbled through an aqueous solution of sulphur dioxide.
- ii. Aqueous ammonia is added dropwise to a solution of copper sulphate till it is in excess
- iii. Tin is treated with concentrated nitric acid
- iv. $CrCl_3$ solution is treated with sodium hydroxide and then with hydrogen peroxide
- v. Pb_3O_4 is treated with nitric acid

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7. Write the balanced equation for the reaction when "a mixture of potassium chlorate acid and sulphuric acid is heated."

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8. Mention the products formed in the following

i. Zinc oxide is treated with excess of sodium hydroxide solution

ii. Iodine is added to a solution of stannous chloride

iii. Sulphur dioxide gas, water vapour and air are passed over heated sodium chloride

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9. Write the balanced equation for the following "Potassium permanganate is reacted with warm solution of oxalic acid in the presence of sulphuric acid"



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10. A mixture of two salt was treated as follows :

- i. The mixture was heated with manganese dioxide and concentrated sulphuric acid , when a yellowish -green gas was liberated.
- ii. The mixture on heating with sodium hydroxide solution gave a gas which turned red litmus blue
- iii. Its solution in water gave a blue precipitate with potassium ferricyanide and red colourtion with ammonium thiocyanate
- iv. The mixture was boiled with potassium hydroxide and the librated gas was bubbled through an alkline solution of K_2HgI_4 to give a brown precipitate identify the two salts gives ionic equation for the reaction involved in the tests (i) , (ii) and (iii).



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11. Write the balancexd chemical equation for the following

- i. Silver chloride is reacted with equation sodium cyanide and the product

thus formed is allowed to react with zinc in an alkaline medium.

ii Cobalt (II) solution reacts with KNO_2 in acetic acid medium

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12. The gas liberated, on heating a mixture of two salts with $NaOH$ gives a reddish brown precipitate with an alkaline solution of K_2HgI_4 the aqueous solution of the mixture on treatment with $BaCl_2$ gives a white precipitate which is sparingly soluble with $K_2Cr_2O_7$ and concentrated H_2SO_4 red vapour of A are produced. The aqueous solution of the mixture gives a deep blue colouration B with potassium ferricyanide soluble identify the radicals in the given mixture and write the balanced equation in the given mixture and write the balanced equations for the formation of A and B

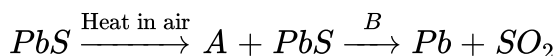
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13. Give reacts in one two sentence for the following "The hydroxide of aluminum and ion are insoluble in water However, $NaOH$ is used to

separate one from other ."

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14. In the following reaction , identify the compound / reaction condition represented by A and B



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15. A light bluish-green crystalline compound responds to the following tests

i. Its aqueous solution gives a brown precipitate or colouration with alkali

$K_2[HgI_4]$ solution

ii Its aqueous solution gives a blue colour with $K_3[Fe(CN)_6]$ solution

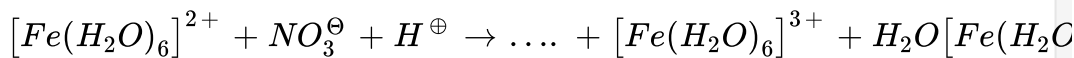
iii Its solution in hydrochloric acid gives a white precipitate with $BaCl_2$ solution

Identify the ions present and suggest the formula of the compound

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16. The acidic aqueous solution of ferrous ion forms a brown complex in the presence of NO_3^\ominus by the following two steps



Complex and balance the equations.

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17. An orange solid A on heating gave a green residue B, a colourless gas C, and water vapour. The dry gas C on passing over heated Mg gave a white solid D. D on reaction with water gave a gas E formed dense white fumes with HCl. Identify A to E and give the reaction involved.

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18. A scarlet compound A is treated with concentrated HNO_3 to give a chocolate brown precipitate B. The precipitate is filtered and the filtrate is

neutralised with NaOH Addition of KI to the resulting solution gives a yellow precipitate C the brown precipitate B on warming with concentrated HNO_3 in the presence of $Mn(NO_3)_2$ produces a pink coloured solution due to the formation of D identify A, B,C, and D write the reaction sequence.

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19. The gradual addition of KJ solution to $Bi(NO_3)_3$ solution identify produces a dark precipitate which dissolves in excess of KJ to give a yellow solution .Write the chemical equation for the above reactions.

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20. Calcium burns in nitrogen to produce a white powder which dissolve in sufficient water to produce a gas A and an alkline solution .The solution on exposure to air produces a this solid layer of B on the surface identify the compound A and B.

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21. A colourless inorganic salt A decomposes completely as about $250^{\circ}C$ to give only produce B and C liquid at room temprature and neutral to moist paper .white the gas B is a netrual oxide .White phospydras burns in excess of B to produce a strong white dehydrating agent write the balanced equation for the reaction involved in the above process

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22. Element A burns in nitrogen to give an ions compound B reacts with water to give C and D .A solution of chemes "milky" on bubbling carbon dioxide identify A,B,C and D

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23. During the quation analysis of a mixture containing Cu^{2+} and Zn^{2+} ions H_2S gas is passed through an acidified solution

containing these ions in order to test Cu^{2+} alone explain

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24. An aqueous solution containing 1 mol of HgI_2 and 2 mol of Nal is orange in colour .On addition of excess Nal , the solution becomes colourless .The orange colour reappears on subsequent addition of $NaOCl$.

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25. A white solid is either Na_2O or Na_2O_2 . A piece of red litmus paper turn when in is freshly made aqueous solution of the white solid.

i. Identify the substance and explain with balanced equation

ii. Explain what would happen to the red litmus if the white solid were the other compound

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26. Write the chemical reaction associated with the "brown ring test"

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27. An aqueous blue colour solution of a transition metal sulphate reacts with H_2S in acidic medium to give a black precipitate A which is insoluble in warm aqueous solution of KOH. The blue solution on treatment with KJ in weakly acidic medium turns yellow and produces a white precipitate B. Identify the transition metal ion, write the chemical reaction involved in the formation of A and B.

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28. Write the chemical reaction associated with the "borax bead test" of cobalt (II) oxide.

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



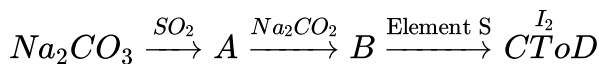
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30. When a white crystalline compound X is heated with $K_2Cr_2O_7$ and concentrated H_2SO_4 , a reddish brown gas A is evolved. On passing A into caustic soda solution, a yellow coloured solution of B is obtained. Neutralizing the solution of B with acetic acid and on obtaining when X is lead acetate with NaOH solution precipitate C is obtained. When X is heated with NaOH solution, a colourless gas is

evolved and on passing the gas into K_2HgI_4 solution a reddish brown precipitate D is formed identify A,B,C and D and X write the equation of the reaction involved.

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31. Identify the following



Also mention the oxidation state of S in all the compounds

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32. A mixture consists of A (yellow solid) and B (colourless solid) which gives lilac colour in flame.

- The mixture gives black precipitate C on passing H_2S gas
- C is soluble in aqua and on evaporation of aqua regain and adding $SnCl_2$ gives greyish -black precipitate D
- The salt solution with NH_4OH gives a brown precipitate .

i. The sodium extract of the salt with $CCl_4/FeCl_3AgNO_2$ solution which is insoluble in NH_3

Identify A and B and the precipitate C and D

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33. AlF_3 is insoluble in anhydrous HF but when little KF is added to the compounds it becomes soluble On addition of BF_3 , AlF_3 is precipitate write the balanced chemical equation .

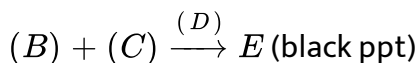
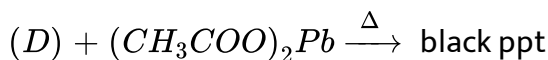
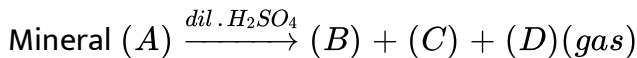
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34. $B \xleftarrow{\text{Moist air}} MCl_4 \xrightarrow{Zn} A$
White fumes having smell M=Transition element colourless Purple colour

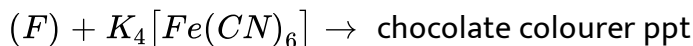
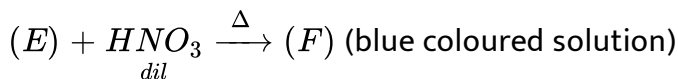
Identify the metal M and hence MCl_4 . Explain the difference in colour of MCl_4 and A.

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1. Identify (A) to (H)



separated from (C) by filtration



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2. An aqueous of salt (A) gives a white crystalline precipitate (B) with $NaCl$ solution. The filtrate gives a black precipitate (C) when H_2S is passed through it compound (B) dissolve in hot water and the solution gives yellow precipitate (D) on treatment with potassium iodide and on cooling. The compound (A) does not give any gas with dilute HCl but

liberates a reddish brown gas on heating identify the compounds (A) to (D) giving the involved equations.

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3. A white amorphous powder (A) when heated gives a colourless gas (B), white turns water milky and the residue (C) which is yellow when but white when cold. The residue (C) dissolves in dilute HCl and the resulting solution gives a white precipitate on potassium ferricyanide solution (A) dissolves in dilute HCl with the evolution of a gas which is obtained above gives a white precipitate (D) on addition of excess of NH_4OH and on passing H_2S Another portion of this solution gives initially a white precipitate (E) on addition of $NaOH$ which dissolves in excess of it identify (A) to (E).

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4. Compound (A) is a light green crystalline solid it gives the following tests

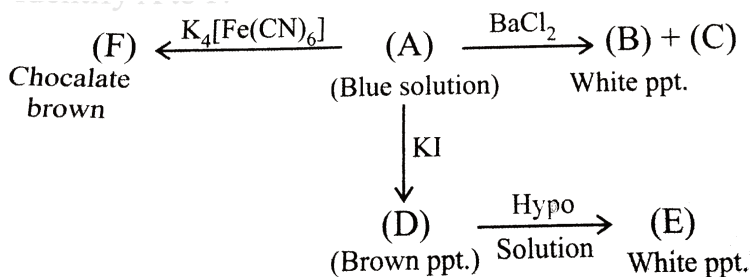
- i. If dissolves in dilute sulphuric acid .No gas is produced
- ii A drop of MnO_4 is added to the above solution .The pink colour disappears
- iii Compound (A) is heated atrongly green (B) and (C) with pungent smell came out .A brown residue (D) is lrft behind
- iv The gas mixture [(B) and (C)] is passed into a dichromate solution .The solution turms green

The green solution from step (iv) gives a white precipitate (E) with a solution of barium nitrate

- vi . Residue (D) from (v) is heated on charcoal in reducing flame it gives a magnetic substance Identify the compound (A) to (E)

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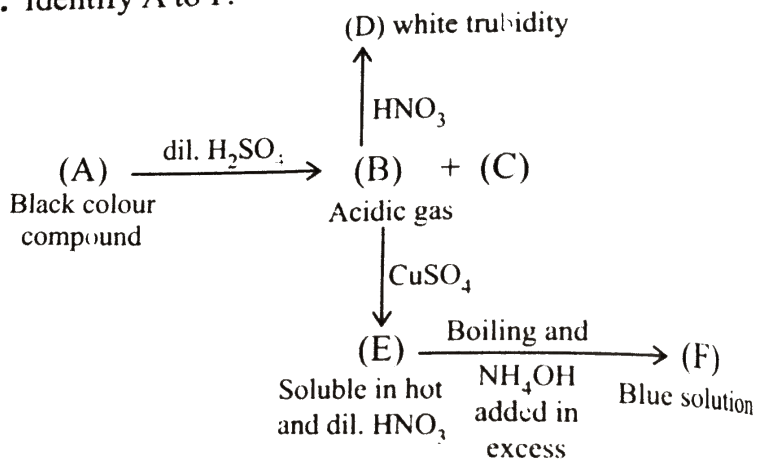
5. Identify A to E



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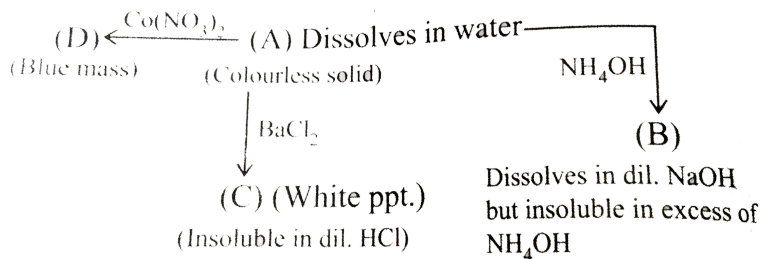
6. Identify A to F

6. Identify A to F.



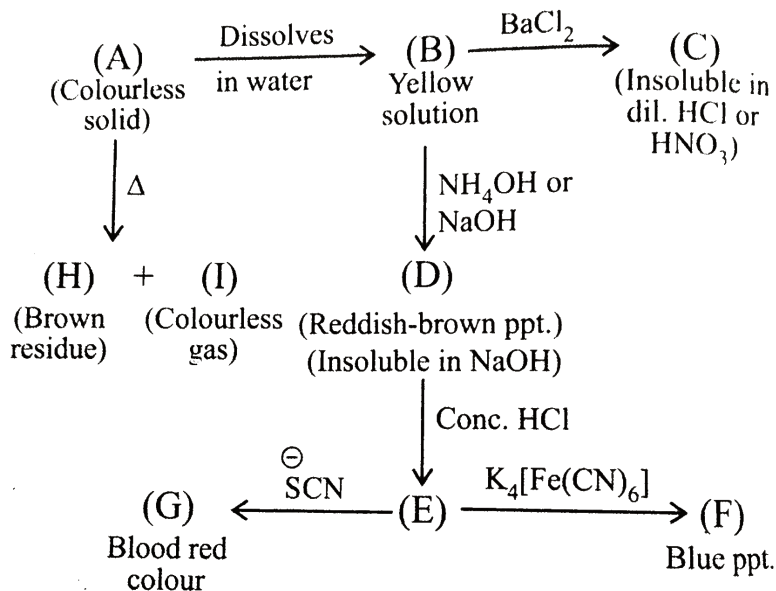
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7. Identify A to D



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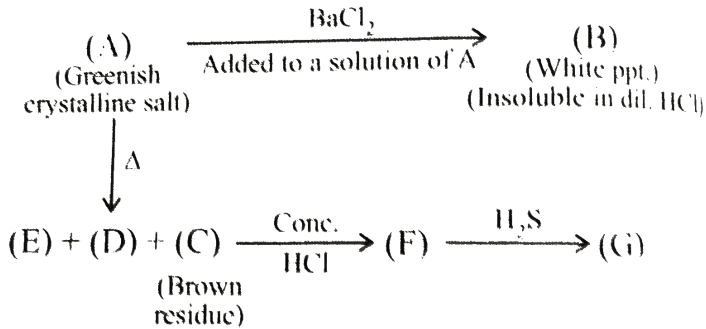
8. Identify A to L



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9. Identify A to G

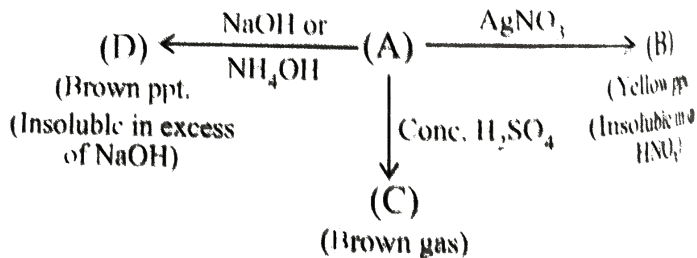
9. Identify A to G.



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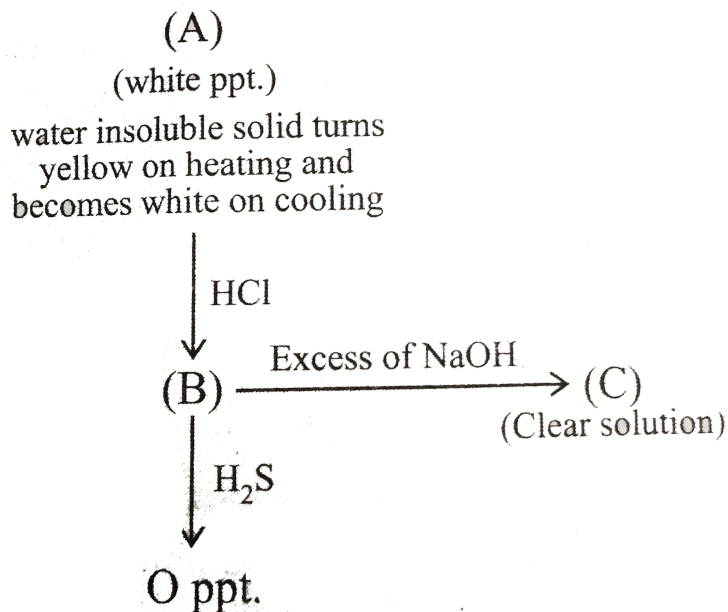
10. Identify A to D

10. Identify A to D.



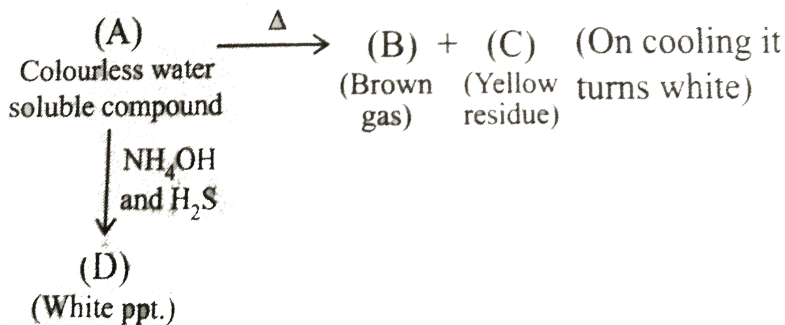
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13. Identify A to C



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14. Identify A to D



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Ex 8.2

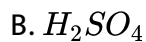
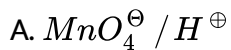
1. Yellow coloured solution of $FeCl_3$ changes in light green when

- A. $SnCl_2$ is added
- B. Zn is added
- C. H_2S gas is added
- D. All true

Answer: d

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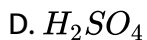
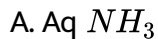
2. Fe^{2+} does not give blue colour with $K_4[Fe(CN)_6]$ but on its reaction with (X), blue colour appears (X) can be



Answer: a

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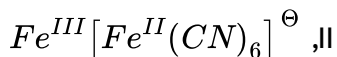
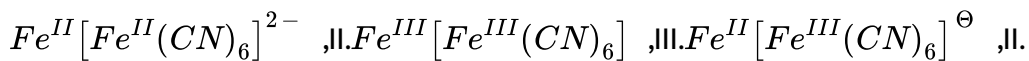
3. $Fe(OH)_3$ and $Cr(OH)_3$ ppt are separated by



Answer: c

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4. Turnbull's blue and Prussian's blue respectively are I.



A. I,III

B. I,III

C. III,IV

D. IV,III

Answer: c



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5. Which of the following are soluble in excess of $NaOH$

(X) : As_2S_3 ,(Y) : CuS ,(Z) : $AlCl_3$

A. X,Y,Z

B. Y,Z

C. X,Z

D. X,Y

Answer: c

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6. A mixture on heating gave a gas used as an anaesthetic soluble in water forming cis , and trans dibasic acid 1.1g of gas occupies 0.56atSTP mixture contain

A. $NaNO_3 + NH_4Cl$

B. $NaNO_2 + NH_4Cl$

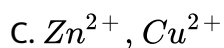
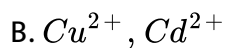
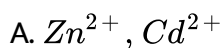
C. $CaCO_3 + MgCO_3$

D. $NH_4Cl + NaSO_4$

Answer: a

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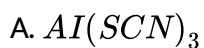
7. Aq solution contains $Zn(CH_3COO)_2$, $Cd(CH_3COO)_2$ and $Cu(CH_2COO)_2$ on passing H_2S gas there is precipitate of As sulphide.

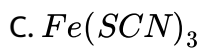
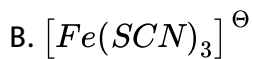


Answer: d

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8. Ferric alum gives red colour with NH_4SCN due to formation of





Answer: c

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9. Colourless salt (X) $\xrightarrow{\Delta}$ (Y) $\xrightarrow{Cu^{2+}, \Delta}$ coloured head (Z) (X) can be

A. borax

B. micro cosmic salt

C. both

D. none

Answer: c

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10. $KCl + \text{conc}H_2SO_4 + K_2Cr_2O_7 \xrightarrow{\Delta} (X) \xrightarrow{NaOH} (Y)$, (X) is reddish brown coloured gas soluble in $NaOH$ forming (Y) , (X) and (Y) are

- A. $Cr_2OCl_2Na_2CrO_3$
- B. $Cr_2O_2Cl_2Na_2CrO_3$
- C. $CrO_2Cl_2Na_2CrO_6$
- D. $CrO_2Cl_2Na_2CrO_4$

Answer: d



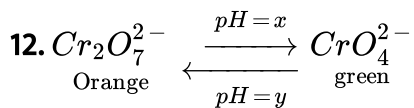
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11. Aqueous solution of $BaBr_2$, gives yellow ppt with

- A. K_2CrO_4
- B. $AgNO_3$
- C. both
- D. none

Answer: c

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The change is based on change in pH probable values of x and y can be

A. 8, 6

B. 8, 10

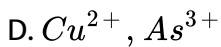
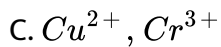
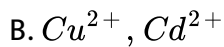
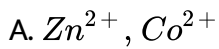
C. 4, 6

D. change is independent of pH

Answer: a

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13. H_2S would separate the following in $\text{pH} < 7$



Answer: c

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14. Solution of (X) in dil $HCl + H_2O \rightarrow$ white turbidity (X) $\xrightarrow{H_2S / HCl}$

back ppt (Y), (Y) is solution in



B. YAS



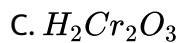
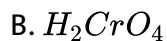
D. HCl

Answer: c



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15. $K_2Cr_2O_7 + \text{conc}H_2SO_4 + H_2O_2 \text{ ether} \rightarrow$ blue precipitate
anhydride (in ethereal layer) Blue colour is due to

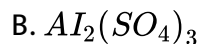


Answer: d



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16. There is fowl small in presence of moisare with



C. FeS

D. $FeSO_4$

Answer: c



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17. $AgNO_3$ given white ppt hypo changing to black after some time .Black ppt is of

A. $Ag_2S_2O_3$

B. Ag_2SO_4

C. $Ag_2S_4O_6$

D. Ag_2S

Answer: d



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18. SO_2 and CO_2 both lime water (A) milky, SO_2 also turns $K_2Cr_2O_7/H^+$ (B) green O_2 is solution in pyrogallal (C) turning it black. These gases are to be detected in order by using these reagents. The order is

A. (A),(B) ,(C)

B. (B),(C) ,(A)

C. (B),(A) ,(C)

D. (A),(C) ,(B)

Answer: c

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19. Aluminium sulphate (X) is slightly insoluble in water it is converted into soluble sulphate by using Na_2CO_3 in the precipitate of sodium carbonate extract. Mole of Na_2CO_3 required for complete conversion of 1 mole of (X) into soluble is

A. 1

B. 2

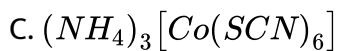
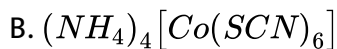
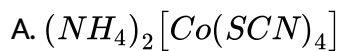
C. 3

D. 4

Answer: c

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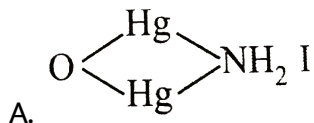
20. $CoCl_2$ gives blue colour with NH_4SCN due to formation of



Answer: a

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21. $HgCl_2 + \text{excess of } KI \rightarrow (A) \xrightarrow{NH_3} (B)$, (A) and (B) respectively are



B. (Y), (X)

C. both (X)

D. both (Y)

Answer: a

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22. NH_4SCN can be used to test ion or more out of Fe^{3+} , Co^{2+} , Cu^{2+}

A. Fe^{3+} only

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

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

D. all

Answer: d

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

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

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

C. all but Fe^{2+}

D. all but Fe^{2+}

Answer: d

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24. Aqueous solution of borax reacts with two mol of acids .This is because of

A. formation of 2 mol of $B(OH)_3$ only

B. formation of 2 mol of $[B(OH)_4]^\ominus$ only

C. formation of 1 mol each of $B(OH)_3$ and $[B(OH)_4]^\ominus$ only

D. formation of 2 mol each of $[B(OH)_4]^\ominus$ and $B(OH)_3$ of which

$[B(OH)_4]^\ominus$ reacts with acid

Answer: d



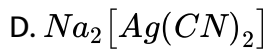
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25. Ag_2S is soluble in $NaCN$ due to formation of

A. $Na[Ag(CN)_2]$

B. $Ag(CN)_2$

C. $Na_2[Ag(CN)_3]$



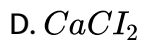
Answer: a



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26. A compound give violet flame rest and gives a white ppt with $AgNO_3$

.The compound is



Answer: b



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27. Bromine vapours turnspaper blue

- A. Starch iodide
- B. Starch
- C. Lead acetate
- D. Methyl orange

Answer: a



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28. Solution of a salt in sulphanilic acid a naphthy lamine give red ppt

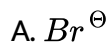
,due to



Answer: b

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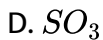
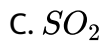
29. Solution of a salt in dil H_2SO_4 produces deep blue colour with starch iodide solution .The salt contains



Answer: c

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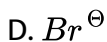
30. The gas which turns mercurous nitrate paper black is



Answer: a

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31. A mixture when heated with dil H_2SO_4 does not evolve brown vapours but with cone H_2SO_4 brown with $AgNO_3$ so it does not give any precipitate. The mixture contains

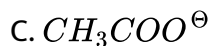
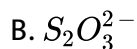


Answer: b



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32. To solution of a salt in acid medium $AgNO_3$ is added a white ppt rapidly changing to yellow orange, brown and finally is obtained. This is due to the presence of



Answer: b



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33. Nitrite and nitrate both respond to ring test. Nitrate are removed by heating with

A. conc HNO_3

B. NH_4Cl

C. Conc H_2SO_4

D. MnO_2

Answer: b



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34. Which of the following metal oxide is white in colour but become yellow on heating

A. AgO

B. ZnO

C. Ag_2O

D. FeO

Answer: b



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35. Chromyl chloride test is performed for the detection of Cl^- . A salt solution containing Cl^- ion is heated with $K_2Cr_2O_7$ and conc. H_2SO_4 . Orange red vapour of Cr_2Cl_2 is obtained. On passing these vapours through a solution of $NaOH$, a yellow ppt. of Na_2CrO_2 is obtained. If these vapours are dissolved in H_2O and acetic acid and lead acetate solution is added then

- A. The solution will remain colourless
- B. The solution will become dark green
- C. The solution will become brown
- D. A yellow ppt will be obtained

Answer: d



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36. The chromyl chloride test responds poorly with the chlorides of *Pb*, *Ag* so *Sn* but fail with the chlorides of

A. *Hg*

B. *As*

C. *Bi*

D. *Cu*

Answer: a



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37. When a salt is heated with dil H_2SO_4 and $KMnO_4$ so in the pink colour of $KMnO_4$ is discharged the mixture may contain

A. Sulphite

B. Carbonate

C. Nitrate

D. Bicarbonate

Answer: a



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38. Ring test for nitrates conformed by acidifying prepared $FeSO_4$ solution a brown ring is formed that is due to the formation of $[Fe(H_2O)_5NO]^{2+}$. This test should not be performed for nitrate ion in presence of

A. NO_2^-

B. Bi^+

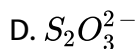
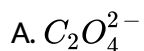
C. I^-

D. All

Answer: d

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39. Soda extract of a salt solution is acidified with excess of dil CH_2COOH and $CaCl_2$ solution is added. A white ppt insoluble in CH_3COOH confirms

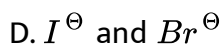
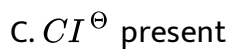
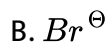


Answer: a

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40. When Cl_2 water is added to an excess solution of KJ in presence of $CHCl_3$ a violet colour is obtained. On adding more of water the violet

colour disappears and a colourless solution is obtained. The test confirms the presence of

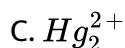
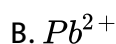
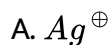


Answer: a



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41. The first group reagent is dil HCl, which of the following do not belong to group I?





Answer: d

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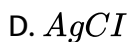
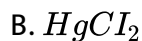
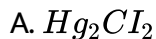
42. Which of the following is not precipitate by H_2S in presence of NH_3



Answer: d

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43. A white ppt obtained in the analysis of a mixture becomes black on treatment with NH_4OH it may be

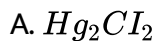


Answer: a



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44. When excess of $SnCl_2$ is added to a soln of $HgCl_2$ a white ppt turning gray is obtained the grey colour is due to the formation of



D. Hg

Answer: d



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45. A white ppt obtained in the analysis of a mixture becomes black on treatment with NH_3 or NH_4OH due to the formation of finely divided Hg and $Hg(NH_2)Cl$ i.e. $[Hg + Hg(NH_2)Cl]$ The salt may be

A. $PbCl_2$

B. $AgCl$

C. Hg_2Cl_2

D. Hg_2Cl_2

Answer: d



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46. Which of the following ions will give a colourless aqueous solution

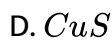
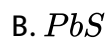
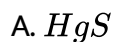


Answer: b



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47. Which of the following is insoluble in dil HNO_3

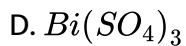
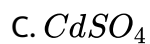
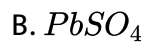
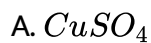


Answer: c



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48. Which of the following sulphate is insoluble in H_2O

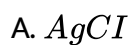


Answer: b



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49. Which one has the minimum solubility product ?



B. $AlCl_3$

C. $BaCl_2$

D. NH_4Cl

Answer: a

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50. When H_2S is passed through an ammonium salt solution X is white ppt is obtained .The X can be a

A. Cobalt salt

B. Zinc salt

C. Nickel salt

D. Manganese salt

Answer: b

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51. With Cu^{2+} ions $[F(CN)_6]^{4-}$ gives appt of $Cu_2[Fe(CN)_6]$

(Cupric ferro cyanide)

A. Blue

B. Green

C. chocolate

D. White

Answer: c



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52. With Co^{2+} ions $[F(CN)_6]^{3-}$ gives appt of $Co_3[Fe(CN)_6]$

A. Blue

B. raddish brown

C. chocolate

D. Green

Answer: b



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53. With Co^{2+} ions NH_4SCN gives appt of $(NH_4)_2[Co(CNS)_4]$ which is soluble in acetone`

A. Blue

B. Green

C. chocolate

D. raddish brown

Answer: a



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54. *Pb* has been placed in groups I and II because

- A. It shows the valency of one and two
- B. It is partly soluble in H_2O
- C. It forms insoluble $PnCl_2$
- D. It from lead sulphide

Answer: b



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55. With Fe^{3+} ions $[Fe(CN)_6]^{4-}$ gives prussian blue colouration due to the formation of ferri-ferro cyanide $Fe[Fe(CN)_6]_2$ white with NH_4SCN , Fe^{3+} ion gives..... Colouration

- A. Deep red
- B. Blue
- C. Brown

D. Green

Answer: a

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56. A metal chloride on heating with $K_2Cr_2O_7$ gives a yellow ppt insoluble in acetic acid .The metal may be

A. Hg

B. Zn

C. Pb

D. Ag

Answer: c

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57. With Zn^{2+} ions $[Fe(CN)_6]^{4-}$ ions gives ...ppt

- A. Blue
- B. chocolate
- C. raddish brown
- D. Bluish white

Answer: d



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58. Which one among the following pairs of ions cannot be separated by

H_2S in dilute HCl ?

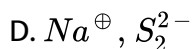
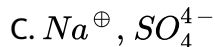
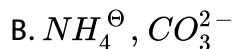
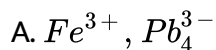
- A. Al^{3+} , Hg^{2+}
- B. Zn^{2+} , Cu^{2+}
- C. Bi^{3+} , Sn^{4+}
- D. Ni^{3+} , Cu^{2+}

Answer: c



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59. Which of the following pairs of ions would be expected to form precipitate when dilute solution are mixed ?



Answer: a



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60. Which one of the following can be used in place of Nh_4CI for identification of the third group radicals?

A. NaCl

B. $(\text{NH}_4)_2\text{SO}_4$

C. $(\text{NH}_4)_2\text{CO}_3$

D. NH_4NO_3

Answer: d



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61. Conc. HNO_3 is added before proceeding to test for group II. This is to

A. Convert Fe^{+2} ion to Fe^{+3} ion

B. Oxidise any remaining H_2S

C. From nitrate which give granular precipitate

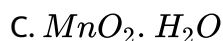
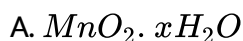
D. Increases ionisation of NH_4OH

Answer: a



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62. In IV th group the ppt of $Mn(OH)_2$ in excess of $NaOH$, turns brown or blue in air due to the formation of



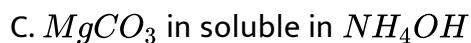
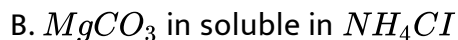
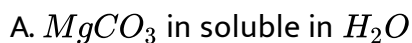
D. All

Answer: d



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63. Mg is not precipitate in group V because



D. All

Answer: b

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64. In group V, $(NH_4)_2CO_3$ is added to precipitate out the carbonate Na_2CO_3 is not added because

A. $CaCO_3$ is soluble in $NaCO_3$

B. $MgCO_3$ will be ppt out in group V

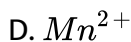
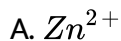
C. Na_2CO_3 increases the solubility of group V carbonates

D. All

Answer: d

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65. DMG gives a rosy red crystalline ppt with



Answer: b



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66. H_2S in the presence of HCl precipitates group II radicals but not of the group IV because

A. HCl activate H_2S

B. HCl increses cone of CI^{\ominus} due to common ion effect

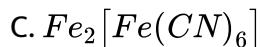
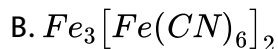
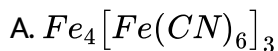
C. HCl decreses cone of S^{2-} due to common ion effect

D. HCl lowers the solubility of H_2S in so in

Answer: c

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67. Prussian's blue is formed when Fe^{+2} ions are added to $K_4[Fe(CN)_6]_2$ Turnbull's blue is

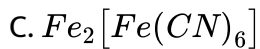
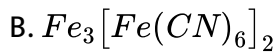
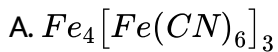


D. All

Answer: a

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68. Turnbull's blue is formed when Fe^{+2} ions are added to $K_3[Fe(CN)_6]_2$ Turnbull's blue is

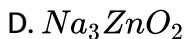
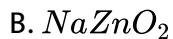
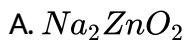


D. All

Answer: b

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69. If group IV the ppt of $Zn(OH)_2$ dissolve in excess of $NaOH$ due to the formation of



Answer: a

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70. Br_2 water in $NaOH$ solution oxidises $Mn(OH)_2$ to a... Ppt due to the formation of $MnO(OH)_2$

A. Black

B. violet

C. Blue

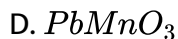
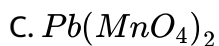
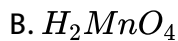
D. white

Answer: a

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71. Brown ppt, of $MnO(OH)$ on boiling with PbO_2 and conc HNO_3 yields a pink colouration on dilution due to the formation of

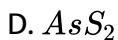
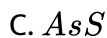
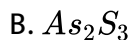
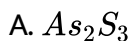
A. $HMnO_4$



Answer: a

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72. A precipitate ofwould be obtained on adding HCl to a solution of As_2S_3 in yellow ammonium sulphide



Answer: b

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73. A precipitate ofwould be obtained on adding HCl to a solution of SnS in yellow ammonium sulphide

A. SnS

B. Sn_2S_3

C. SnS_2

D. $(NH_4)_2SnS_2$

Answer: c



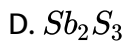
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74. Which of the sulphides of group II is orange ?

A. CuS

B. CdS

C. As_2S_3

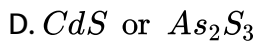
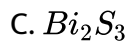
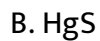


Answer: d



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75. Which of the sulphides of group II is black or brownish black?



Answer: d



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76. Sometimes yellow turbidity appears white passing H_2S gas even in the group II radicals. This is because of

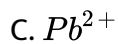
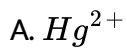
- A. Sulphate is present in the mixture as impurity
- B. Group IV radicals are precipitate as sulphides
- C. The oxidation of H_2S gas by some acid radicals
- D. Group II radicals are precipitate as hydroxides

Answer: c



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77. An inorganic substance gives black ppt in group II which is dissolved in aqua regia. Evaporate off aqua regia and dilute it with water. To this few drops of ammonium thiocyanate and sodium acetate followed by $Co(NO_3)_2$ are added. A deep blue colour or ppt is obtained. This is due to presence of



Answer: a



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78. The sodium carbonate bead test in which Na_2CO_3 is used instead of borax .it is suitable to chromium and



Answer: a

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79. Orange coloured sodium cobaltinitrite $Na_3[Co(NO_3)_6]$ is used for the detection of K^{\ominus} which gives ppt due to the formation of pot sod cobaltinitrite $K_2Na[Co(NO_2)_6]$

- A. White
- B. Orange
- C. Yellow
- D. Brown

Answer: c

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Viva Voce Questions And Part-A (Analysis Of Anions)

1. What is a group reagent ?



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2. Why sodium carbonate extract is used for testing acid radicals?



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3. Can we use sodium bicarbonate in place of sodium carbonate in preparing an extract for detection of anions?



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4. Why is sodium carbonate extract acidified before performing the confirmatory tests for anions?



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5. Can sodium carbonate extract be used test for CO_3^{2-} ions ?

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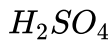
6. What is lime water?

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7. Why does lime water turns milky on bubbling CO_2 gas through it?

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8. Name the anions which giive brown fumes on reacting with dilute/conc.



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9. Why does a paper soaked in $K_2Cr_2O_7$ solution turn green in the detection of SO_3^{2-} ion?

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10. Can filter paper dipped in silver nitrate solution instead of lead acetate paper be used for testing a sulphide?

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11. A gas evolved with effervescence on treating a salt with dil. HCl may be CO_2 or SO_3 . How will you distinguish between them?

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12. How will you distinguish between carbonate and bicarbonate ions?

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13. How can sulphide ions be distinguished from sulphite ions?

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14. How will you distinguish between sulphate and thiosulphate ions?

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15. How will you distinguish between sulphite and sulphate ions?

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16. How can nitrite ion be distinguished from nitrate ion?

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17. What is the formula of compound present in brown ring?

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18. Why is a freshly prepared solution of $FeSO_4$ used for the detection of nitrate and nitrite?

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19. Why does only the organic layer assure colour and not the aqueous layer when the tests for halides are done?

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20. What happens when chloride, bromide and iodide are separately heated with conc. H_2SO_4 ?

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21. How do you distinguish between Br^\ominus and NO_3^\ominus ions?

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22. Given salt is a bromide or iodide. How will you identify it by treating the salt with chlorine water and CS_2 ?

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23. Why does the chromyl chloride test fail with Br^\ominus and I^\ominus ?

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24. For testing SO_4^{2-} with $BaCl_2$ solution why should sodium carbonate not be acidified with too much of conc. HCl.

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25. Can any other reagent in place of lime water be employed for identification of CO_2 gas?

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26. At times the solution of lime water appears milky. Comment.

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27. Name the gas other than CO_2 which also turns lime water milky.

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28. Why is it necessary to test for the acid radicals first (with dilute H_2SO_4 and then with conc. H_2SO_4)?

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29. What is chromyl chloride test? Why is it so named?

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30. Sodium carbonate extract is acidified with HNO_3 only in the identification of halides. Comment.

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Viva Voce Questions And Part-B (Dry Tests)

1. Why do salts of the following ions Cu^{2+} , Ba^{2+} , Sr^{2+} , Ca^{2+} , Na^{\oplus} and K^{\oplus} impart colour to the flame?

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2. Why is HCl employed in flame test?

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3. What type of flame is employed to perform the flame test? How is it obtained?



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4. Why is a green flame not obtained in the case of barium sulphate or phosphate?



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5. Can we perform the charcoal cavity test without the addition of fusion mixture (Na_2CO_3 and K_2CO_3) with the carbonate of metals?



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6. Why do we not perform borax bead test with the white salt?



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7. What is the composition of the bead obtained when borax is heated in the flame?

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8. Why is a small quantity of mixture used in the borax bead test?

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9. Name the cations which can be identified by flame test.

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Viva Voce Questions And Part-C (Analysis Of Cations)

1. Why is it necessary to prepare original solution for the detection of basic radicals?

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2. Why do we not prefer to prepare original solution in conc. H_2SO_4 or conc. HNO_3 ?

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3. What is solubility product? Explain its importance in qualitative analysis.

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4. What is the basis of classification of cations into different group ?

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5. Why are only Pb^{2+} , Ag^{\oplus} and Hg_2^{2+} ions precipitated in group I?

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6. Why is lead placed in group I as well in II?

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7. Is it necessary to acidify a solution before group II cations are precipitated with H_2S ?

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8. Give the reason for the formation of a light yellow or white ppt. in the group II even if it may not be because of some metal ion.

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9. Why do we prefer HCl for preparing solution of cations?

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10. Is it advisable to use conc. HCl in place of dilute HCl for preparing original solution

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11. Why is it essential to boil off H_2S gas before proceeding to group III

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12. Can the solution be acidified with HNO_3 in group II before passing H_2S gas?

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13. What can it be, if the precipitate of group I is soluble in hot water and insoluble in cold water?



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14. Why is H_2SO_4 never employed for preparing original solution for the identification of cations?



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15. Group I filtrate is made moderately acidic before proceeding to group II. Explain.



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16. What is the



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17. Why do we add excess of NH_4Cl and NH_4OH in the precipitation of group III cations?

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18. Why is it essential to oxidise ferrous salt to ferric salt in group III?

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19. Can NH_4Cl be replaced by any other ammonium salt for the precipitation of group III cations?

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20. How will you distinguish between ferrous and ferric salts?

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21. Can we add NH_4OH first and NH_4Cl later in the analysis of group III cations?

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22. Can we use $NaCl$ and $NaOH$ in place of Na_4Cl and NH_4OH in the group III cation precipitation.

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23. Why are Zn, Mn, Ni, Co not precipitated in the group III as hydroxides?

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24. Why are the group IV cations not precipitated as sulphides on passing H_2S gas through group II solution?

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25. Why is a brownish ppt. obtained in group II even if iron aluminium and chromium are absent?

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26. Why sometimes, a black coloured precipitate obtained in group IV even if nickel and cobalt ions are absent?

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27. Why excess of NH_4OH is used in precipitating the sulphides of group IV cations?

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28. Why sometimes colloidal precipitate is obtained in group IV?

Comment



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29. Why is NH_4Cl essential in the precipitation of group V cations?



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30. Does the excess of NH_4Cl affect the precipitation of group V cations by $(NH_4)_2CO_3$?



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31. Why are all aqueous solution of the cobaltous salts pink?



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32. At times NH_4OH is added before adding $(NH_4)_2CO_3$ to precipitate group V cations explain.

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33. How will you remove the excess of NH_4Cl before adding $(NH_4)_2CO_3$ for the precipitation of group?

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34. Why is $CaSO_4$ not precipitated on adding ammonium sulphate to a solution containing Ca^{2+} and Sr^{2+} ions?

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35. At times warming is suggested while precipitating group V cation explain.

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36. Can we use $NaCO_3$ in place of $(NH_4)_2CO_3$ in group V?

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37. Why do we test group V cations in the order of Ba, Sr, and Ca?

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38. Why is only acetic acid employed for dissolving the group V ppt.

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39. Sometimes no precipitate is obtained even if group V radicals are present why ?

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40. Calcium oxalate is soluble in dilute HCl. Explain.

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41. Why is a precipitate of magnesium carbonate not formed along with the carbonates of Ba, Sr and Ca in group V?

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42. At times a white ppt. is obtained in group VI even in the absence of Mg. explain.

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