



## CHEMISTRY

### BOOKS - CENGAGE CHEMISTRY (ENGLISH)

### 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. An 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 turn into green, What is the compound formed?
- d. A metallic statue under acid-rain attack turns to blushing -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 paint contains  $Pb^{2+}$



Watch Video Solution

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



Watch Video Solution

3. a. While testing oxalate, gas obtained burns with a blue flame initially but is put off instantly even as gas appears coming. Explain.

b.  $I^-$  also interfere in the 'Ring Test' of  $NO_3^-$  suggest a chemical reagent that removed  $I^-$



Watch Video Solution



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

(A) + conc.  $H_2SO_4 \xrightarrow{\Delta}$  brown vapours intensify 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.  $Na_2B_4O_7 \cdot 10H_2O$  + conc.  $H_2SO_4 \xrightarrow{\Delta}$  (A)  $\xrightarrow{CH_3OH, \Delta}$  (B) identify (A) and (B)

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

Gas (B) turns  $K_2Cr_2O_7/H^+$  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.



Watch Video Solution

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

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

Soluble in  $\text{H}_2\text{O}$

Soluble in hot water

↓  
(i)  $\text{FeSO}_4$   
(ii) conc.  $\text{H}_2\text{SO}_4$

↓  
KI

Brown colour ring (D)

Yellow ppt. (C)

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



Watch Video Solution

6. Complete the reaction:

Quick lime + Water = \_\_\_\_\_

Brine solution (Electrolysis)=\_\_



Watch Video Solution

7. Salt (A) makes part of electrode and is insoluble in water (A) is blackened by  $\text{NH}_3$  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)



Watch Video Solution

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



Watch Video Solution

9.  $HgS$  is soluble in aqua regia forming  $HgCl_2$ . What happens if Cu turnings are added to  $HgCl_2$ ?



Watch Video Solution

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



Watch Video Solution

11. Sometimes it happens that when  $H_2S$  gas is passed into solution in dil,  $HCl$  yellowish white turbidity appears. What do you conclude? What preparation are taken to check this turbidity?



Watch Video Solution

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



Watch Video Solution

13. Light green solution of (A) does not give blue coloured ppt. With  $K_4[Fe(CN)_6]$  but on adding a drop of  $HNO_3$  blue ppt (B) appears

.However (A) gives blue colour (C ) with  $K_4[Fe(CN)_6]$  Identify (A) if it, also gives white ppt with  $AgNO_3$  solution?



Watch Video Solution

14. There is no limitation of Modern periodic table. True/False



Watch Video Solution

15. State True/False.

The atomicity of Sulphur is 4



Watch Video Solution

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  $NH_4Cl$ , white ppt (B) appears. (A) also gives yellow ppt with  $AgNO_3$  identify (A),(B) and (C )



Watch Video Solution

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



Watch Video Solution

18. Colourless solution of (A) gives white ppt (B) with  $AgNO_3$  which is soluble in aqueous  $NH_3$ . (A) also gives white 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).



Watch Video Solution

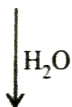
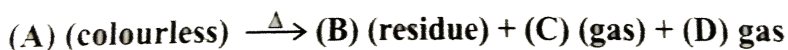
19.  $MCl_2 + K_2CrO_4 \rightarrow$  yellow ppt, what can be  $MCl_2$

a. If it is soluble in hot water?

b. If it gives green colour in flame ?



Watch Video Solution



20.

What is A?



Watch Video Solution

21.  $\text{CaSO}_4$  is insoluble but is not precipitated when excess of  $(\text{NH}_4)_2\text{SO}_4$  is added to  $\text{CaCl}_2$ . Explain



Watch Video Solution

## 22. State True/False

Melting of ice is Exothermic process.



**Watch Video Solution**

23. (i) Write a balanced chemical equation for process of photosynthesis. (ii) When do desert plants take up carbon dioxide and perform photosynthesis? Answer.



**Watch Video Solution**

24. A compound (X) imparts a golden yellow flame and shows the following reactions : (i) Zinc powder, when boiled with the concentrated aqueous solution of (X) dissolves and hydrogen, is evolved. (ii) When an aqueous solution of (X) is added to an aqueous solution of stannous chloride, a white precipitate is obtained first which dissolves in excess of solution of (X) Identify (X) .





Watch Video Solution

## Solved Example

1. Name the reducing agent in the following reaction:  $3\text{MnO}_2 + 4\text{Al}$   
 $\text{————} \rightarrow 3\text{Mn} + 2\text{Al}_2\text{O}_3$  State which is more reactive, Mn or Al and why?



Watch Video Solution

2. Give reason for the following: (a) School bells are made up of metals.  
(b) Electric wires are made up of copper.



Watch Video Solution

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 while ppt with  $ZnCl_2$  or  $AlCl_3$  but ppt. Dissolves in excess of (A), what is (A) and explain reaction



Watch Video Solution

4. Identify (A) based on following facts :

- a. A reduces  $HgCl_2$  solution to white ppt. changing to grey .
- b. (A) turns  $FeCl_3$  yellow colored solution to green .
- c. (A) give white ppt, with  $NaOH$  soluble in excess of  $NaOH$  .
- d. (A) gives yellow dirty ppt. on passing  $H_2S$  gas , soluble in yellow ammonium sulphide (YAS).
- e. (A) gives chromyl chloride test .



Watch Video Solution

5. Write the chemical equation of the reaction in which the following changes have taken place with an example of each: (i) Change in colour

(ii) Change in temperature



Watch Video Solution

6. 2g of ferrous sulphate crystals are heated in a dry boiling tube. (i) List any two observations. (ii) Name the type of chemical reaction taking place. (iii) Write the chemical equation for the reaction.



Watch Video Solution

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

a.  $Ag^{\ominus}$  and  $B^{2+}$

b.  $Cu^{2+}$ ,  $Pb^{2+}$



Watch Video Solution

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

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

b.  $Cr_2O_3$  and  $Fe(OH)_3$



Watch Video Solution

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)



Watch Video Solution

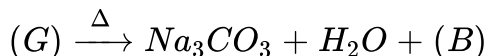
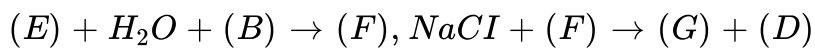
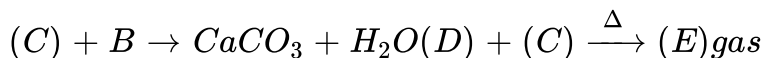
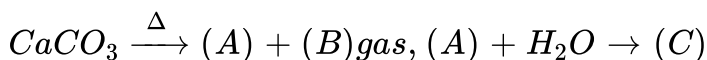
10. Decomposition of Silver chloride is an exothermic reaction.

True/False



Watch Video Solution

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



Watch Video Solution

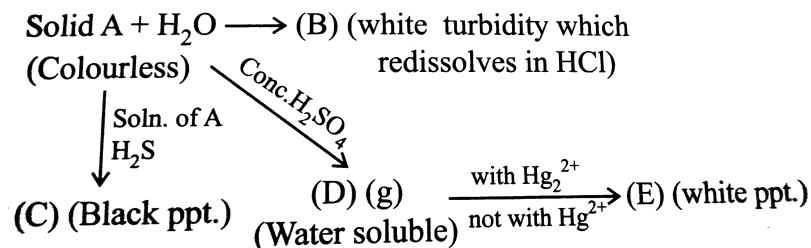
## Exercises (Linked Comprehension)

1. State True/False. Evaporation is Exothermic process.



Watch Video Solution

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



Identify B

A.  $BiOCl$

B.  $BaS$

C.  $BaClI_3$

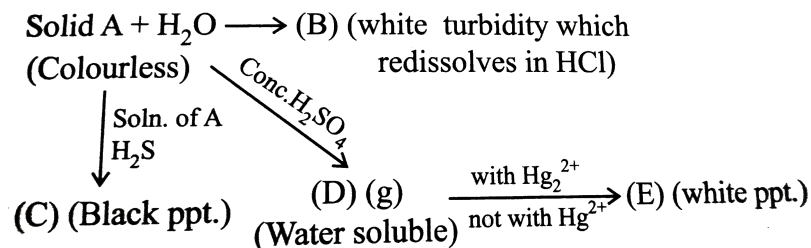
D. None of these

Answer: a



Watch Video Solution

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



Identify C

A.  $BiOCl$

B.  $Bi_2S_3$

C.  $BiCl_3$

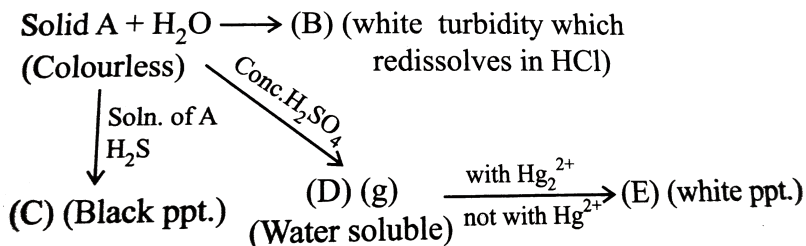
D.  $H_2S$

Answer: b

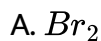


Watch Video Solution

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



Identify D



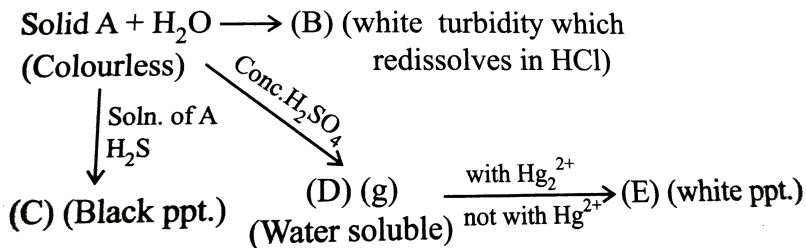
Answer: b



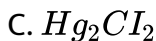
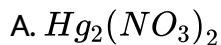
Watch Video Solution



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



Identify E



Answer: c



Watch Video Solution

Greenish crystalline compounds (A)  $\xrightarrow{\text{BaCl}_2 \text{ Soln.}}$  (B) (white ppt. insoluble 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 white ppt.)  $\xleftarrow{\text{H}_2\text{S}}$  F (yellow solution)  $\xrightarrow{\text{K}_4[\text{Fe}(\text{CN})_6]}$  Blue ppt.

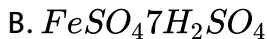


Green soln.

$\downarrow$  Filter

6. H (Greenish filtrate)

Identify compound A



Answer: b



Watch Video Solution

Greenish crystalline compounds (A)  $\xrightarrow{\text{BaCl}_2 \text{ Soln.}}$  (B) (white ppt. insoluble 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 white ppt.)  $\xleftarrow{\text{H}_2\text{S}}$  F (yellow solution)  $\xrightarrow{\text{K}_4[\text{Fe}(\text{CN})_6]}$  Blue ppt.

$\downarrow \text{SnCl}_2$   
Green soln.

$\downarrow$  Filter

7. H (Greenish filtrate)

Gases C and D are

A.  $\text{SO}_2, \text{SO}_3$

B.  $\text{SO}_3, \text{CO}_2$

C.  $\text{NO}_2, \text{MgO}$

D.  $\text{ZnO}, \text{SO}_3$

Answer: a



Watch Video Solution

Greenish crystalline compounds (A)  $\xrightarrow{\text{BaCl}_2 \text{ Soln.}}$  (B) (white ppt. insoluble 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 white ppt.)  $\xleftarrow{\text{H}_2\text{S}}$  F (yellow solution)  $\xrightarrow{\text{K}_4[\text{Fe}(\text{CN})_6]}$  Blue ppt.

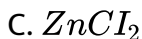
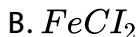
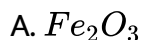


Green soln.

$\downarrow$  Filter

8. H (Greenish filtrate)

Identify yellow solution F



Answer: b



Watch Video Solution

9.

A.  $SiO_2$

B.  $ZnS$

C.  $S$

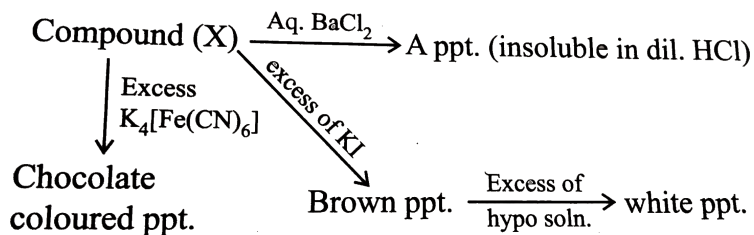
D.  $FeS$

Answer: c



View Text Solution

10.



Identify X

A.  $CuSO_4$

B.  $BaSO_4$

C.  $BaCl_2$

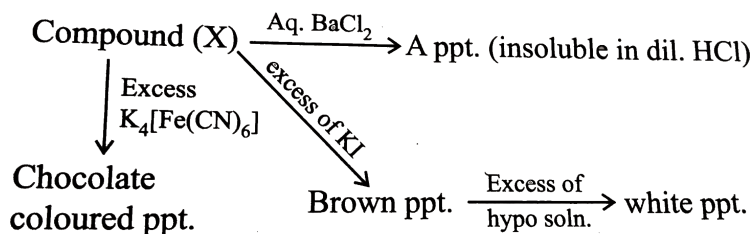
D. NaI

Answer: a



Watch Video Solution

11.



What is the formula of chocolate coloured ppt ?

A.  $Fe_4[Fe(CN)_6]$

B.  $Cu_2[Fe(CN)_6]$

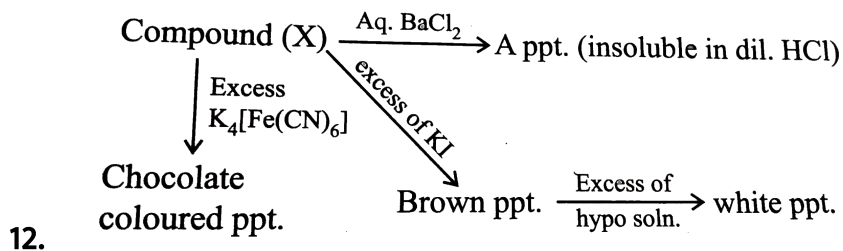
C.  $Cu_4[Fe(CN)_6]$

D.  $Cu(CN)_2$

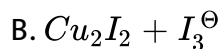
Answer: b



Watch Video Solution



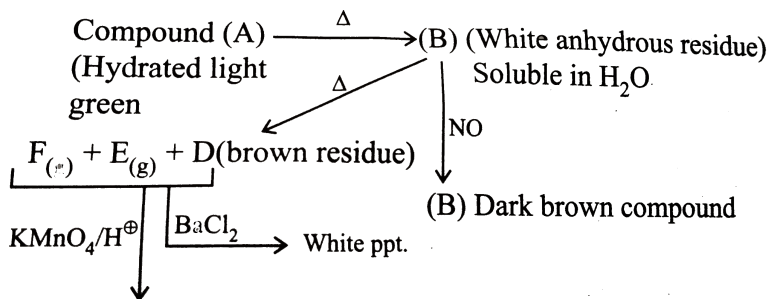
What is the formula of brown ppt ?



Answer: b

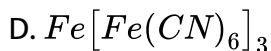
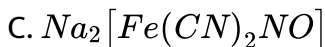
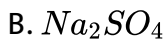
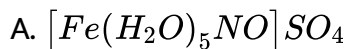


View Text Solution



13.

Identify C

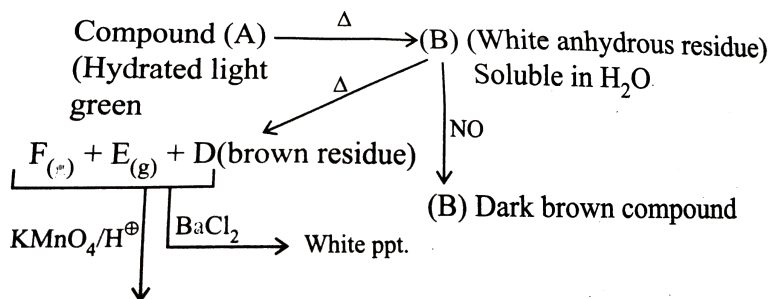


Answer: a



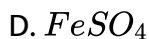
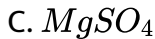
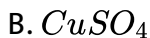
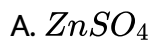
View Text Solution





14. Pink colour of  $KMnO_4$  is discharged

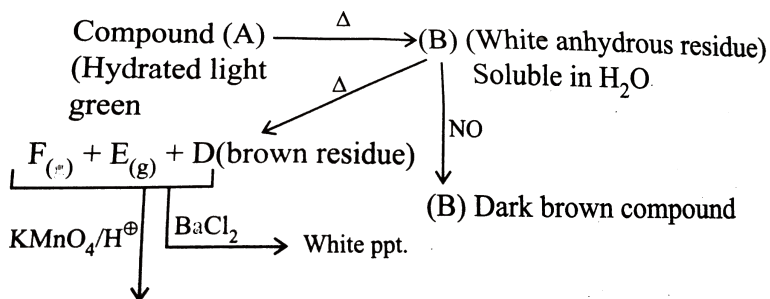
Identify B



Answer: d



Watch Video Solution



15. Pink colour of  $KMnO_4$  is discharged

Identify D

A.  $ZnO$

B.  $FeO$

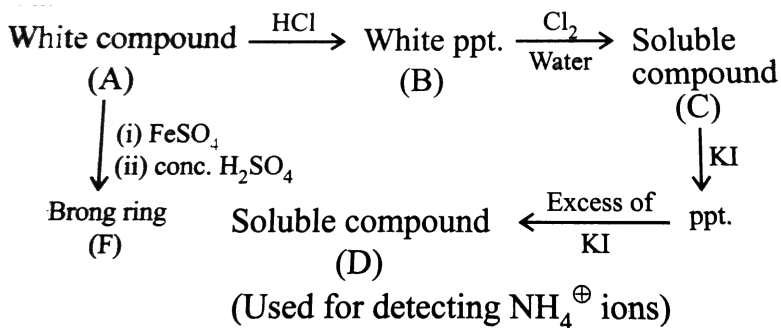
C.  $Fe_2O_3$

D.  $CuO$

Answer: c

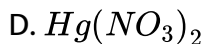
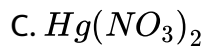
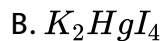
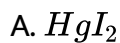


View Text Solution



16.

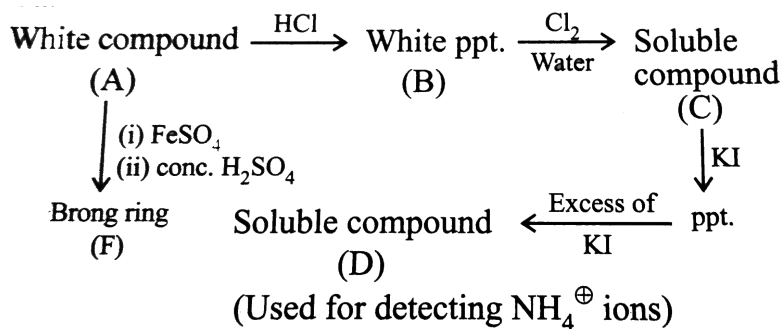
Compound (A) is



Answer: d



Watch Video Solution



17.

Oxidation state of Fe in compound (F) is

A. + 1

B. + 2

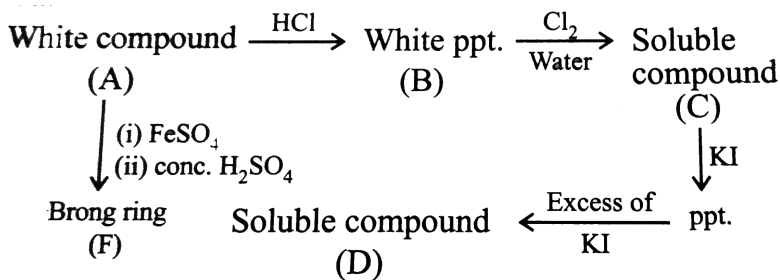
C. + 3

D. + 4

Answer: a



Watch Video Solution

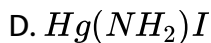
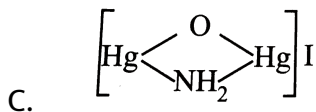
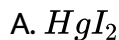


(Used for detecting  $\text{NH}_4^+$  ions)

18.

(D) +  $(\text{NH}_4)_2\text{SO}_4 \rightarrow$  brown ppt (G)  
in basic medium

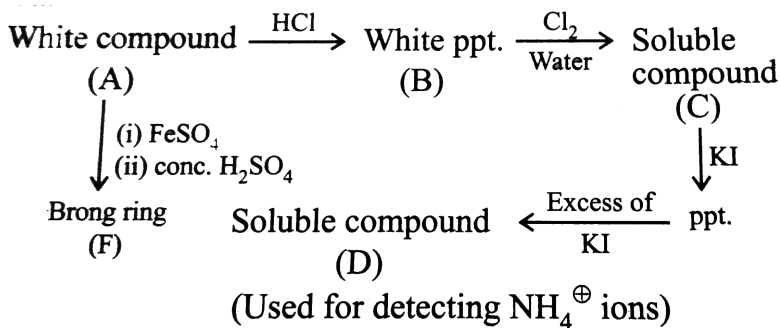
Hence, compound(G) is



Answer: c



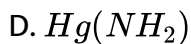
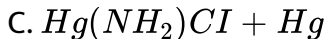
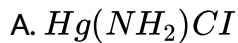
Watch Video Solution



19.

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

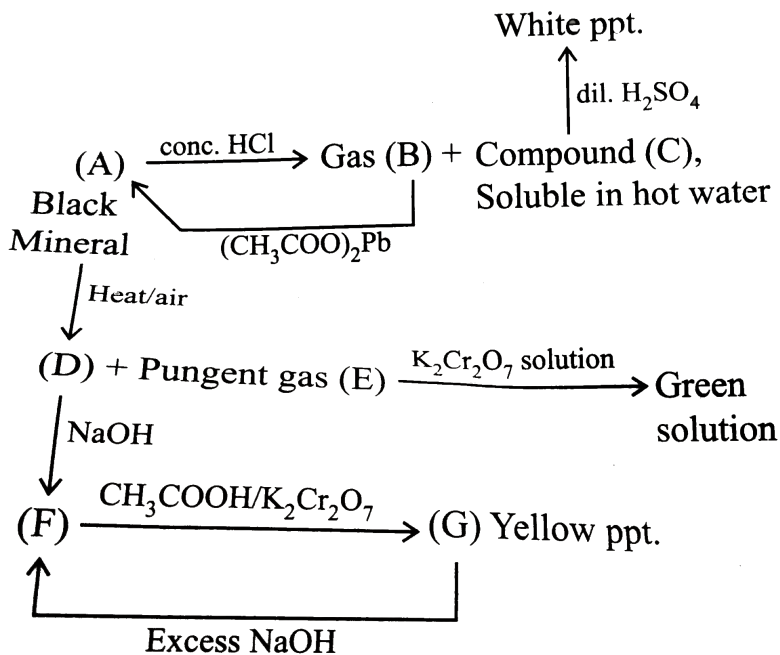
Hence, (H) is due to the formula of



Answer: c



Watch Video Solution



20.

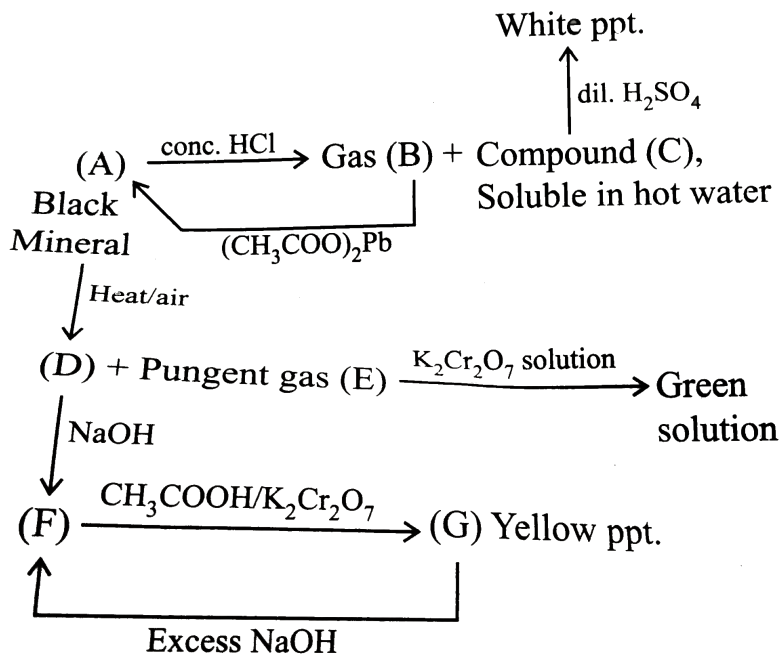
Gas (B) on passing through  $\text{CaSO}_4$  solution will give

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

Answer: b

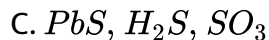
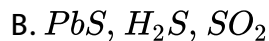
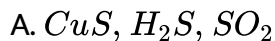


Watch Video Solution



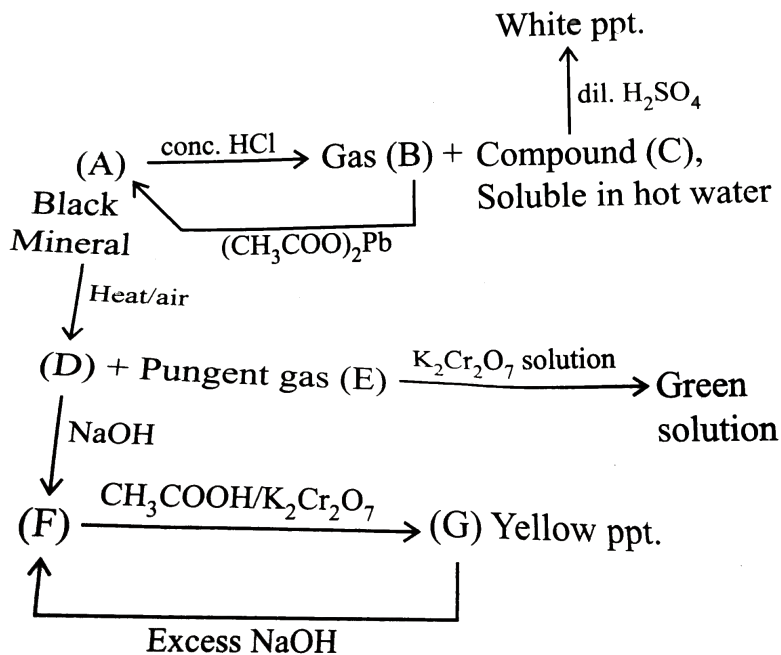
21.

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



Answer: b





22.

Compound (C) and (D) are respectively

- A.  $\text{PbO}$ ,  $\text{PbCl}_2$
- B.  $\text{PbCl}_2$ ,  $\text{PbO}$
- C.  $\text{PbO}$ ,  $\text{PbO}_2$
- D.  $\text{PbS}$ ,  $\text{PbO}$

Answer: b



Watch Video Solution

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

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

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

Identify A

A.  $NH_4NO_2$

B.  $NH_4NO_3$

C.  $HCl$

D.  $NaSO_4$

Answer: b



Watch Video Solution

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

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

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

Identify B

A.  $SO_2$

B.  $NH_3$

C.  $N_2O$

D.  $NO_2$

Answer: b

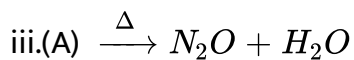


Watch Video Solution

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

ii. After (B) is expelled completely, resultant alkline solution again gives

gas (B) on heating with zine



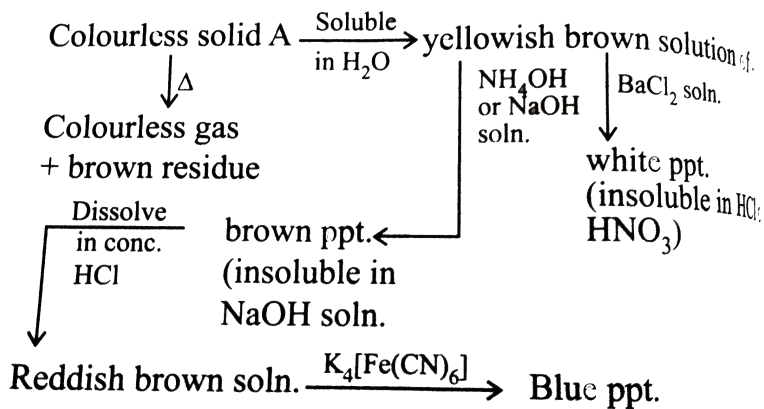
What is the formula of white fumes?



**Answer: b**

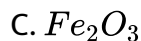
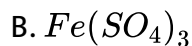
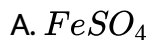


**Watch Video Solution**



26.

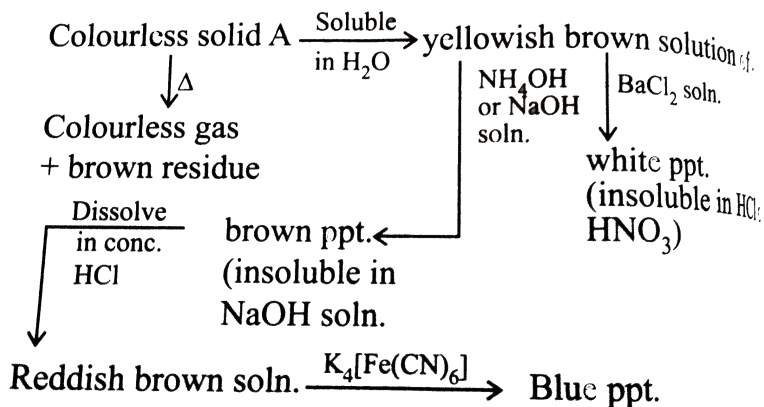
Identify A



Answer: b

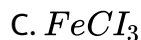
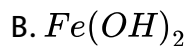
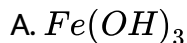


Watch Video Solution



27.

What is the formula of brown ppt?

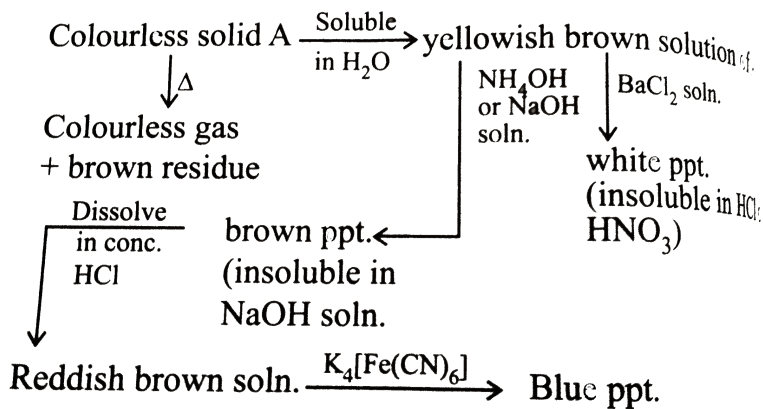


D. None of these

Answer: a

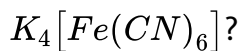


Watch Video Solution



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



Watch Video Solution

Solid (A)  
(White, water insoluble)  $\xrightleftharpoons[\text{Cooling}]{\text{Heating}}$  yellow

↓ HCl or  
excess of NaOH  
Clear soln. (B)  $\xrightarrow{\text{H}_2\text{S}}$  No reaction  
↓ Neutralise and  
pass  $\text{H}_2\text{S}$   
white ppt. (D)

29.

Identify A

A. ZnS

B. ZnO

C. MgO

D. FeO

Answer: b



Watch Video Solution



Solid (A)  
(White, water insoluble)  $\xrightleftharpoons[\text{Cooling}]{\text{Heating}}$  yellow

$\downarrow$  HCl or excess of NaOH  
Clear soln. (B)  $\xrightarrow{\text{H}_2\text{S}}$  No reaction  
 $\downarrow$  Neutralise and pass  $\text{H}_2\text{S}$   
white ppt. (D)

30.

Identify B

A.  $\text{FeCl}_2$

B.  $\text{NiCl}_2$

C.  $\text{ZnCl}_2$

D.  $\text{FeCl}_3$

Answer: c



Watch Video Solution

31. Give IUPAC name of  $\text{K}^2[\text{Zn}(\text{OH})_4]$



Watch Video Solution

Solid (A)  
(White, water insoluble)  $\xrightleftharpoons[\text{Cooling}]{\text{Heating}}$  yellow

↓ HCl or  
excess of NaOH  
Clear soln. (B)  $\xrightarrow{\text{H}_2\text{S}}$  No reaction  
↓ Neutralise and  
pass  $\text{H}_2\text{S}$   
white ppt. (D)

32.

Identify D

A. ZnO

B. ZnS

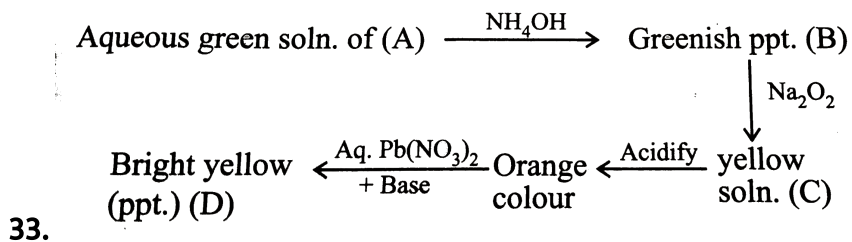
C. FeO

D. FeS

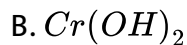
Answer: b



Watch Video Solution



Identify A

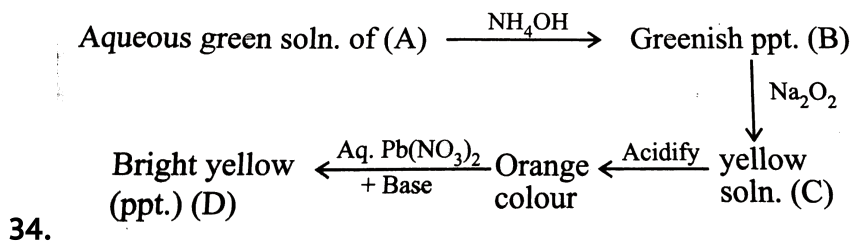


D. None of these

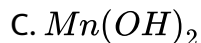
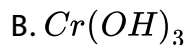
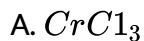
Answer: c



Watch Video Solution



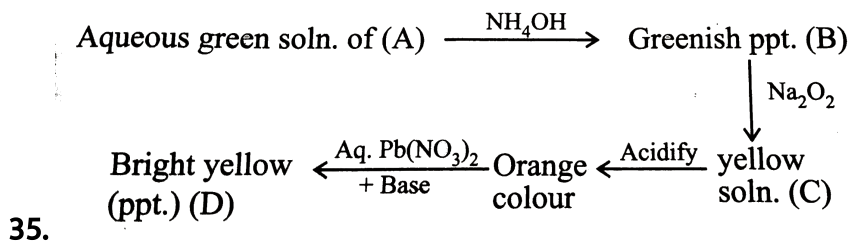
Identify B



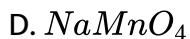
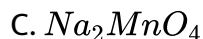
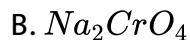
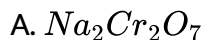
Answer: b



Watch Video Solution



Identify C



Answer: b

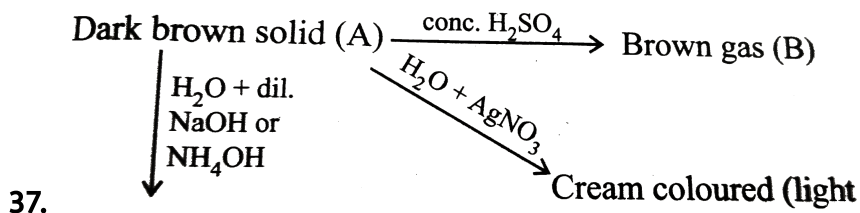


Watch Video Solution

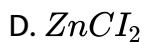
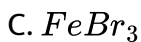
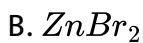
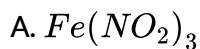
36. Complete the following chemical reactions. (i)  $\text{PbS(s)} + \text{H}_2\text{O}_2\text{(aq)} \rightarrow$   
 (ii)  $\text{MnO}_4^- \text{(aq)} + \text{H}_2\text{O}_2\text{(aq)} \rightarrow$  (iii)  $\text{CaO(s)} + \text{H}_2\text{O(g)} \rightarrow$



Watch Video Solution



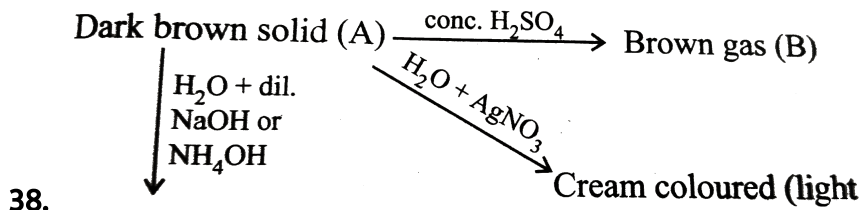
Identify A



**Answer: c**



**Watch Video Solution**



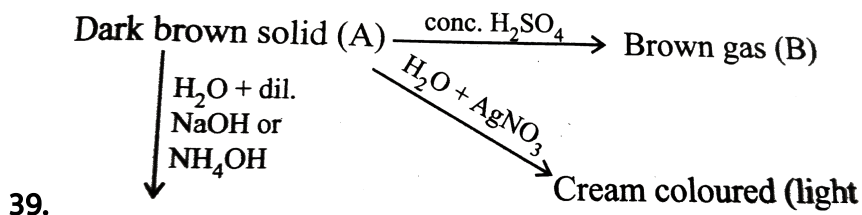
Identify B



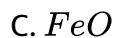
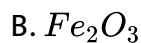
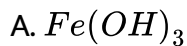
Answer: b



Watch Video Solution



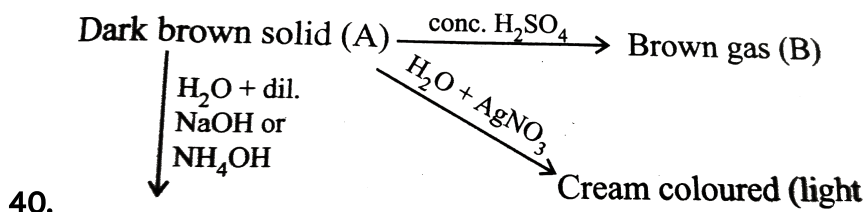
Identify C



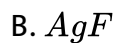
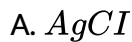
Answer: a



Watch Video Solution



Identify A





D. None of these

Answer: c



Watch Video Solution

41. 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 alkali

Identify A.

A.  $NaNH_4HPO_4 \cdot 4H_2O$

B.  $Na_2B_4O_7 \cdot 10H_2O$

C.  $CuSO_4 \cdot 5H_2O$

D. None of these

Answer: b

[Watch Video Solution](#)

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) .

A.  $NaPO_3$

B.  $NaBO_2$

C.  $NaBO_2 + B_2O_3$

D. None of these

**Answer: c**

[Watch Video Solution](#)

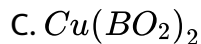
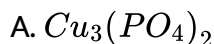
43. i.(A)  $\xrightarrow{\Delta}$  glassy transparent bead (B) on platinum wire

(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



Watch Video Solution

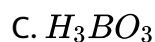
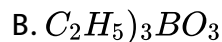
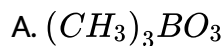
44. i.(A)  $\xrightarrow{\Delta}$  glassy transparent bead (B) on platinum wire

(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.



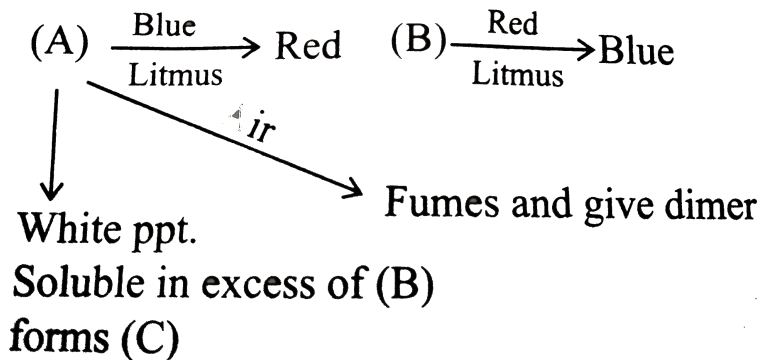
D. None of these

Answer: b

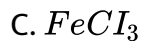
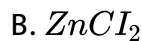


Watch Video Solution

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



Identify A



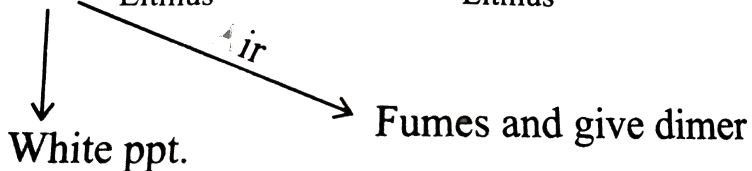
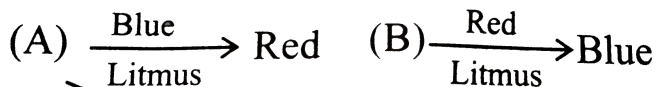
D. None of these

Answer: a



Watch Video Solution

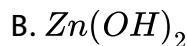
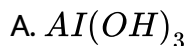
46. A colourless mixture of two salts (A) and (B) [excess] is soluble in



Soluble in excess of (B)

$H_2O$ . forms (C)

Identify B



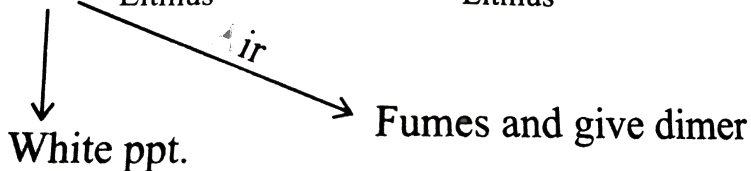
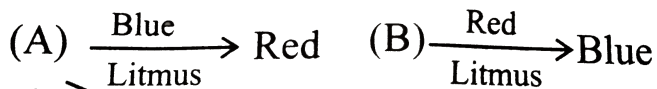
D. None of these

Answer: c



Watch Video Solution

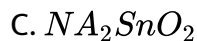
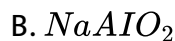
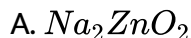
47. A colourless mixture of two salts (A) and (B) [excess] is soluble in



Soluble in excess of (B)

$H_2O$ . forms (C)

Identify C

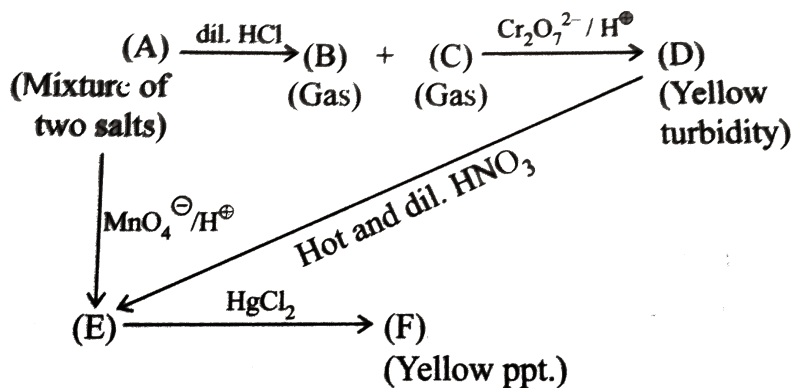


D. None of these

Answer: b



Watch Video Solution



48.

Find the anion (s)

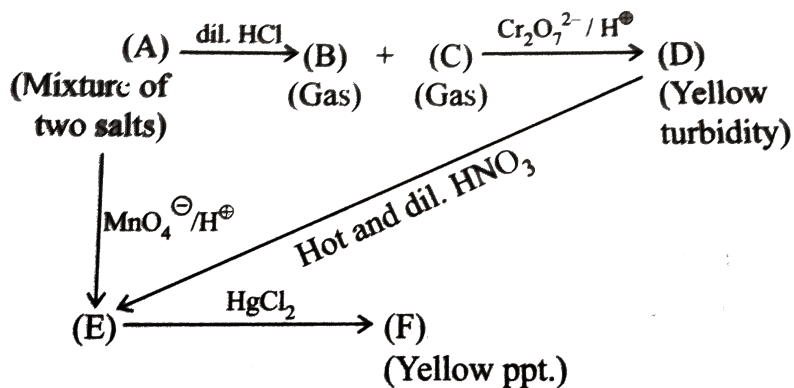
- A.  $\text{SO}_3^{2-}$
- B.  $\text{S}_3^{2-}$ ,  $\text{S}^{2-}$
- C.  $\text{SO}_3^{2-}$ ,  $\text{CO}_3^{2-}$
- D.  $\text{S}_2\text{O}_3^{2-}$

Answer: b



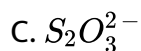
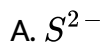
Watch Video Solution





49.

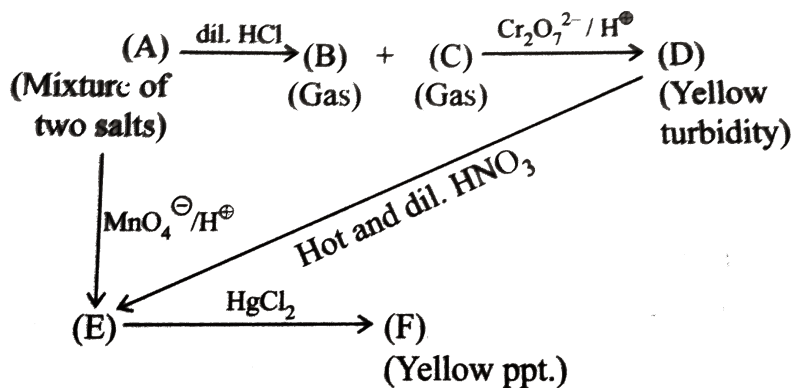
Find out (E )



Answer: d

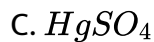
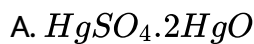


Watch Video Solution



50.

Find out (F)



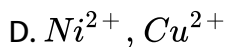
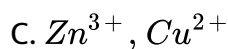
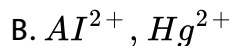
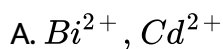
Answer: a



Watch Video Solution

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 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.

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



**Answer: a**



**Watch Video Solution**

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 contains  $Hg^{2+}$ ,  $Hg_2^{2+}$ ,  $Pb^{2+}$ . The addition of  $2M HCl$  will precipitate.

A.  $HgCl_2$  only

B.  $PbCl_2$  only<sup>-</sup>

C.  $PbCl_2$  and  $Hg_2Cl_2$

D.  $PbCl_2$  and  $CdCl_2$

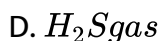
**Answer: c**



**Watch Video Solution**

53. 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 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



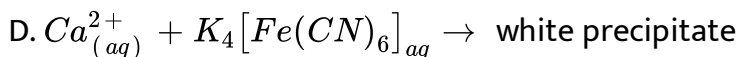
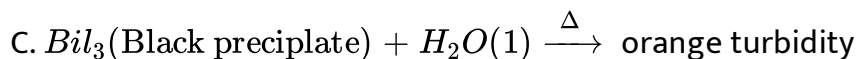
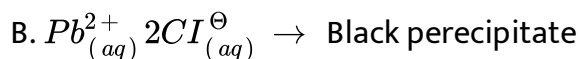
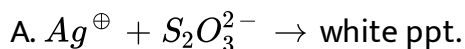
Answer: b



Watch Video Solution

54. 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 is not correctly matched ?

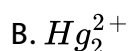
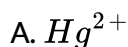


**Answer: b**



**Watch Video Solution**

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 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 cation (i.e. basic radicals) forms coloured (not white) precipitates with aqueous solution of potassium iodide the precipitate does not dissolve in excess of reagent?

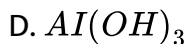
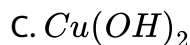
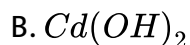
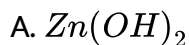


**Answer: b**



**Watch Video Solution**

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**



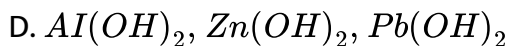
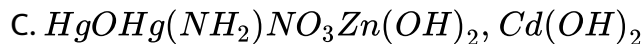
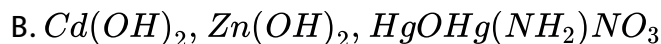
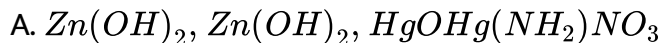
**Watch Video Solution**



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



Answer: a,b



Watch Video Solution

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

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



**Answer: a,b**

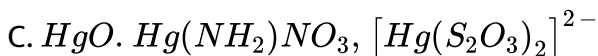
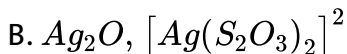
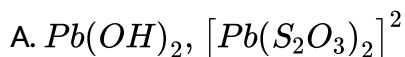


**Watch Video Solution**

59.  $NH_3$  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 ppt in (c) and the soluble complex from white ppt with the type solution is//are



D. None of these

**Answer: a,c**



**Watch Video 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**



**Watch Video 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 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 mass of compound E is

- A. Ammonia
- B. Hydrazoic acid
- C. Hydrogen amide
- D. None of these

Answer: b



Watch Video 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 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 .

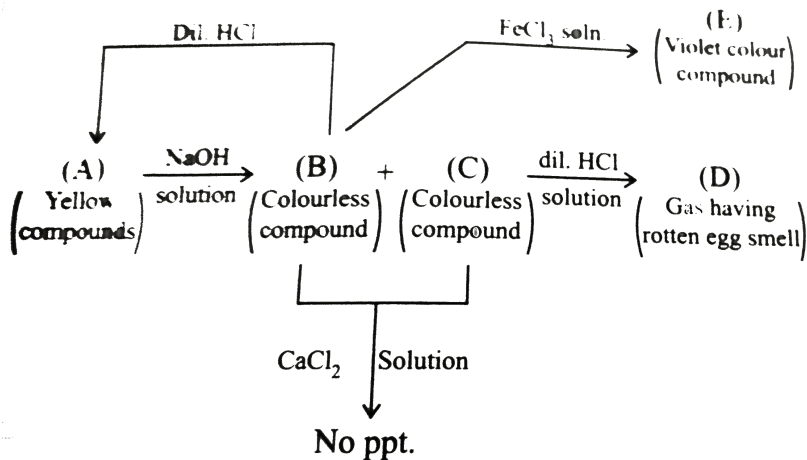
The compound C has

- A. Linear geometry
- B. Pyramidal
- C. Terehedral
- D. None of these

**Answer: b**



**Watch Video Solution**



63.

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  $\text{CaCl}_2$  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

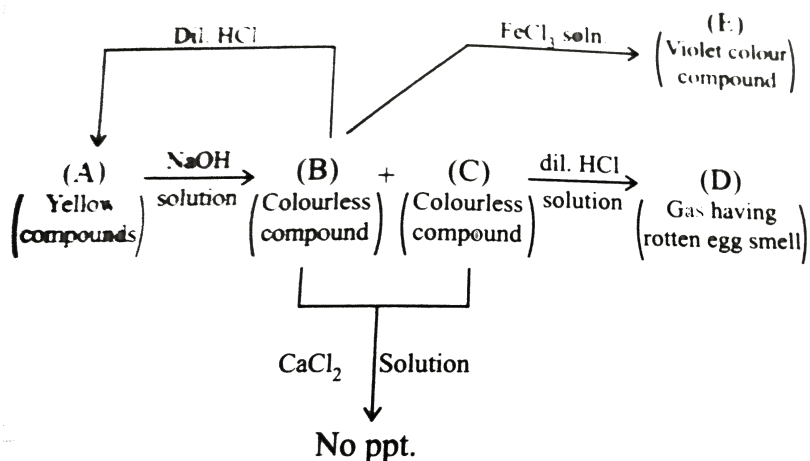
C. III only

D. I, II, IV

Answer: c



Watch Video Solution



64.

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

- A. Optical isomerism
- B. Geometrical isomerism
- C. Linkage isomerism
- D. No isomerism

Answer: a



Watch Video Solution



65. 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

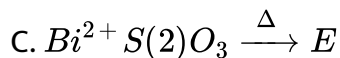
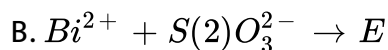
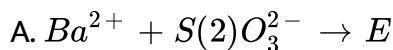
Answer: b



Watch Video Solution

66. 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**



**Watch Video Solution**

**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 (B) is not soluble in

A. Tartaric acid

B. HCl

C.  $HNO_3$

D.  $H_2SO_4$

**Answer: a**



**Watch Video Solution**

### Exercises (Multiple Correct) Part-A (Analysis Of Anions)

1. When Zn reacts with conc  $HNO_3$ , 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



Watch Video Solution

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

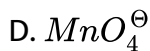
D. Phenolphthalein is turned pink by soluble carbonate and colourless by soluble hydrogen carbonate.

**Answer: a,c,d**



**Watch Video Solution**

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

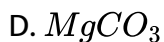
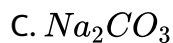
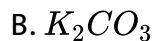
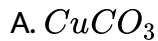


**Answer: a,b,c**



**Watch Video Solution**

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

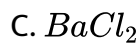
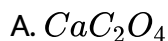


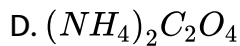
Answer: b,c,



Watch Video Solution

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



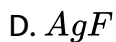
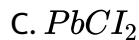
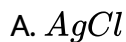


Answer: c,d,



Watch Video Solution

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



Answer: a,b,c



Watch Video Solution

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



A. Bromides

B. Iodides

C. Nitrates

D. Nitrite

**Answer: c,d**



**Watch Video Solution**

**8. 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**



**Watch Video Solution**

9. Which of the following anions are easily removed from aqueous solution by precipitation ?



Answer: a,b,d



Watch Video Solution

10. 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  $ZnSO_4$  is treated with  $Na_2S$

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

**Answer: a,b,c**



**Watch Video Solution**

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

A.  $K^{\oplus}, SO_4^{2-}$

B.  $Na^{\oplus}, S^{2-}$

C.  $Ag^{\oplus}, NO_3^{\ominus}$

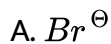
D.  $Al^{3+}, HO^{\ominus}$

**Answer: a,b,c**



**Watch Video Solution**

12. Reddish brown gas is obtained when the following are treated with conc  $H_2SO_4$



Answer: a,b,c



Watch Video Solution

13. The correct statement (s) is/are with respect to chromyl 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**



**Watch Video Solution**

**14.** Nitrite ( $\text{NO}_2^\ominus$ ) interferes in the ring -test of nitrate ( $\text{NO}_3^\ominus$ ). Some of the following reagent can be used for the removal of nitrite

A.  $\text{NH}_4\text{Cl}$

B.  $(\text{NH}_2)_2\text{CS}$ (thiourea)

C.  $\text{NH}_2\text{SO}_3\text{H}$  (sulphamic acid)

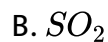
D. None of these

**Answer: a,b,c**



**Watch Video Solution**

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

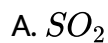


Answer: a,b,



Watch Video Solution

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

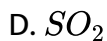
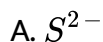


Answer: a,c,d



Watch Video Solution

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

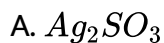


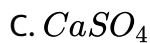
Answer: a,b,c,d



Watch Video Solution

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



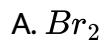


**Answer: a,b,c,d**



**Watch Video Solution**

**19. Which of the following gases have brown colour ?**



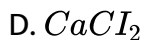
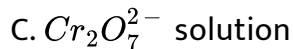
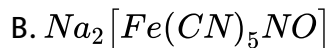
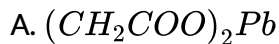
**Answer: a,b**



**Watch Video Solution**



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

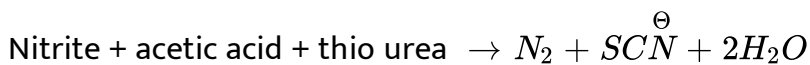


Answer: a,b,d

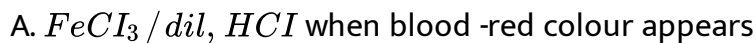


Watch Video Solution

21. Consider the following reaction



Formation of the product in the reaction cannot be identified by



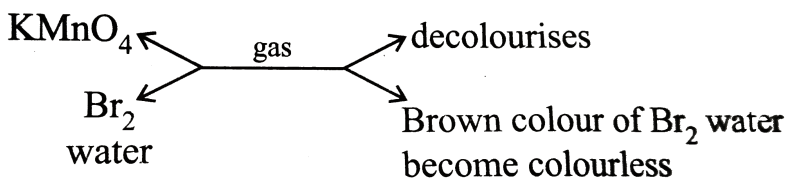
C.  $K_2Cr_2O_7$ ,  $HCl$  when green colour appears

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

Answer: b,c,d



Watch Video Solution



22. The gas will be

The gas will be

A.  $CO_2$

B.  $SO_2$

C.  $H_2S$

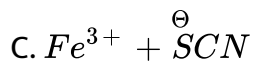
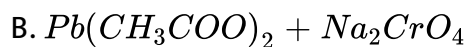
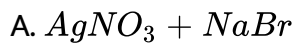
D.  $SO_3$

Answer: b,c



Watch Video Solution

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



D. None of these

Answer: a,b



Watch Video Solution

24. Which of the following nitrates are water soluble ?



B.  $AgNO_3$

C.  $Hg(NO_3)_2$

D.  $LiNO_3$

**Answer: a,b,c,d**



**Watch Video Solution**

**25. 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**



**Watch Video Solution**

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

- A. NaCl solution
- B. NaBr solution
- C. Chloride water
- D. Bromine water

**Answer: c,d**



**Watch Video Solution**

27. 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  $SO_3$

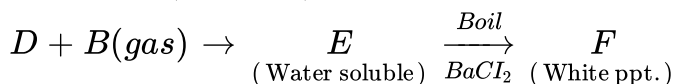
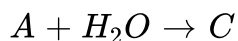
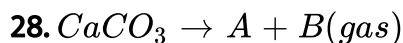
C. sample has only  $CO_2$  and  $SO_2$

D. sample has  $H_2S$

**Answer: a,b,d**



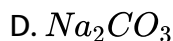
**Watch Video Solution**



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

A.  $CaCO_3$

B.  $MgCO_3$



**Answer: a,c**



**Watch Video Solution**

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

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

B. Sodium acetate, 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  $Cl_2$  oxidises  $NO_2^\ominus$

**Answer: a,c**



**Watch Video Solution**

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



D. None of these

Answer: a,b,c



Watch Video Solution

### 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**



**Watch Video Solution**

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**



**Watch Video Solution**

3. Bromine is not recognised by is



Watch Video Solution

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

A.  $CI_2$

B.  $Br_2$

C. Soluble  $CI^\ominus$

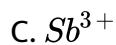
D. Solution  $Br^\ominus$

Answer: a,b



Watch Video Solution

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

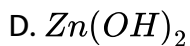
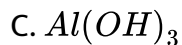
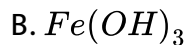
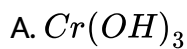


**Answer: b,d**



**Watch Video Solution**

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

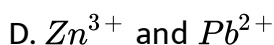
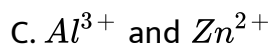
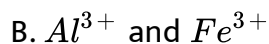
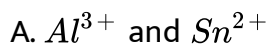


**Answer: c,d**



**Watch Video Solution**

7. Concentrated aqueous sodium hydroxide cannot separate a mixture of



Answer: a,c,d



Watch Video Solution

8. The metal ion(s) which is/are not precipitated when  $H_2S$  is passed with  $HCl$  is



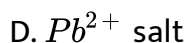
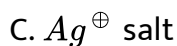
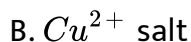
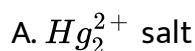


**Answer: a,b,d**



**Watch Video Solution**

9. 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 :



Answer: a,b,c



Watch Video Solution

10. When  $H_2S$  gas is passed through aqueous solution of  $CuCl_2$ ,  $HgCl_2$ ,  $BiCl_3$  and  $CoCl_2$  in the presence of excess of dilute HCl, it fails to precipitate

A. CuS

B. HgS

C.  $Bi_2S_3$

D. CoS

Answer: a,b,c



Watch Video Solution

11. 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



Watch Video Solution

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

A.  $Zn^{2+}$

B.  $Cd^{2+}$

C.  $Cu^{2+}$

D. None of these

**Answer: a,b,c**



**Watch Video Solution**

**13.** Which of the following pairs can be separated by  $H_2S$  in dil  $HCl$ ?

A.  $Cu^{2+}$  and  $Cd^{2+}$

B.  $Cu^{2+}$  and  $Ni^{2+}$

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

D.  $Hg^{2+}$  and  $Al^{3+}$

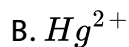
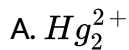
**Answer: b,c,d**



**Watch Video Solution**



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



Answer: b,c,d



Watch Video Solution

15. Ammonium molybdate is used to test the radical



D.  $Ag^{\oplus}$

**Answer: a,b**



**Watch Video Solution**

**16.** Which of the following chlorides are water soluble ?

A.  $AgCl$

B.  $Hg_2Cl_2$

C.  $HgCl_2$

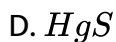
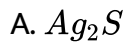
D.  $NaCl$

**Answer: c,d**



**Watch Video Solution**

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

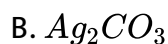
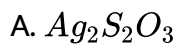


Answer: a,b,c



Watch Video Solution

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



C.  $Ag_2SO_3$

D.  $AgI$

**Answer: a,b,c**



**Watch Video Solution**

**19.** Which of the following ppt is insoluble in  $NH_3$  solution ?

A.  $AgI$

B.  $Ag_2S$

C.  $AgCl$

D.  $AgBr$

**Answer: a,b**



**Watch Video Solution**

20. 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



Watch Video Solution

21. 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**



**Watch Video Solution**

**22.** 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**



**Watch Video Solution**

**23.** Which of the following statement is not correct ?

- A. Lead(II) chloride is soluble in hot water and resppears on cooding
- B. in dilute HCl th e solubility of  $PbCl_2$  is higher then the hot water
- C. in concetrated  $HCl$ ,  $PbCl_2$  is insoluble
- D. Lead (II) chloride forms the complex are having white ppt ?

Answer: b,c



Watch Video Solution

24. Which of the following compound are having white ppt ?

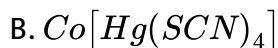
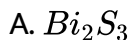
- A.  $K_2Fe[Fe(CN)_6]$
- B.  $[Fe(H_2O)_3(SCN)_1]^{2+}$
- C.  $ZnS$
- D.  $Zn(OH)_2$

Answer: a,c,d



Watch Video Solution

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



Answer: a,b,c,d



Watch Video Solution

26. 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 :



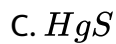


**Answer: a,c,d**



**Watch Video Solution**

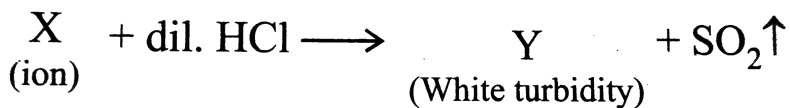
**27. Which sulphides are soluble only in aqua regia ?**



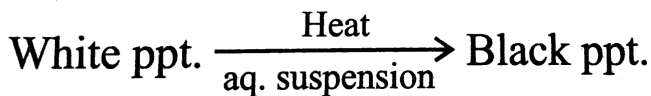
**Answer: a,b,c**



**Watch Video Solution**

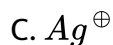
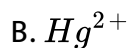
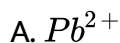


↓  
Reagent



28.

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



Answer: a,b,c



Watch Video Solution

1. Flame test is not given by

A.  $Mg^{2+}$  ions

B.  $Ba^{2+}$  ion

C.  $Be^{2+}$  ions

D.  $Ca^{2+}$  ions

Answer: a,c



Watch Video Solution

2. Borax bead test is not given by

A. Copper salts

B. Nickel salts

C. Aluminium salts

D. Magnestion salts

**Answer: c,d**



**Watch Video Solution**

**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**



**Watch Video Solution**

**4. In borax bead test, which compound (s)is/are not formed?**

A. Orthoborate

B. Metaborate

C. Double oxide

D. Tetraborate

**Answer: a,b,d**



**Watch Video Solution**

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

A.  $Co^{2+}$

B.  $Cr^{3+}$

C.  $Ni^{2+}$

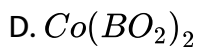
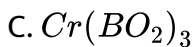
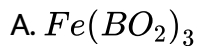
D.  $Cu^{2+}$

**Answer: a,d**



**Watch Video Solution**

6. Which of the following substance are green ?

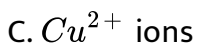


Answer: a,c



Watch Video Solution

7. Borax heat test is given by



D.  $Ni^{2+}$

**Answer: a,c,d**



**Watch Video Solution**

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

A. Borax

B. Microcostric salt

C. Copper sulphate

D. None of these

**Answer: a,b**



**Watch Video Solution**

1. Select the correct statement(s):

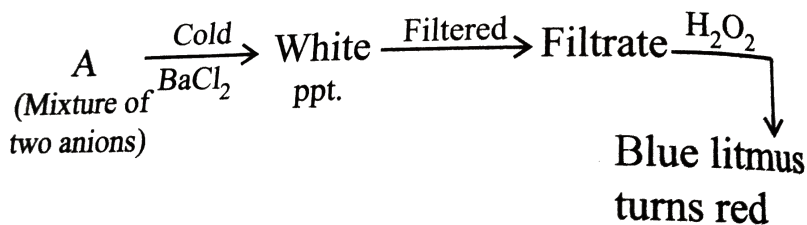
- A. Normal and polysulphides of alkali metals are soluble in water
- B. The sulphides of aluminum and magnesium can only be prepared under dry condition as they are completely hydrolysed by water
- C. When filter paper is moistened with a solution of sodium molybdate made alkaline with sodium hydroxide 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 thiosulphate.

Answer: a,b,c



Watch Video Solution





2.

Mixture of A contains

A.  $\text{CO}_3^{2-}$ ,  $\text{HCO}_3^\ominus$  anions

B.  $\text{CO}_3^{2-}$ ,  $\text{HSO}_3^\ominus$  anions

C.  $\text{SO}_3^{2-}$ ,  $\text{HSO}_3^\ominus$  anions

D. None of these

Answer: b,c



Watch Video Solution

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

A. Maganess salt give a violet borax head 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  $K^+$ ,  $Cu^{2+}$  and  $HCO_3^-$  ions we get a precipitate of  $K_2Cu(CO_3)_2$

Answer: a,c,d



Watch Video Solution

4. A solution of colourless salt 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) is (are).

A.  $NH_4NO_3$

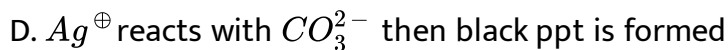
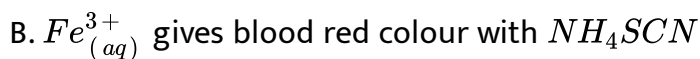
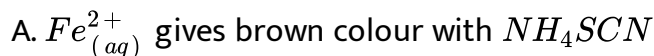


**Answer: a,b**



**Watch Video Solution**

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



**Answer: a,c,d**



**Watch Video Solution**

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**



**Watch Video Solution**

7. Cone  $H_2SO_4$  will not give any gas with

A.  $ZnSO_4$

B. barium phosphate

C. megnesium borate

D. sodium oxalate

Answer: a,b,c



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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 soluble

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**



**Watch Video Solution**

**11. Select the correct statement(s):**

A.  $Ag_2S_2O_3$  appears as white precipitate when  $Na_2S_2O_3$  reacts with  $AgNO_3$

B.  $Ag_2S_2O_3$  is unstable turning black standing due to formation of  $Ag_2S$

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

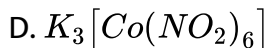
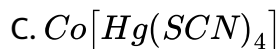
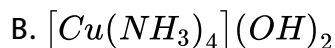
D.  $Na_2S_2O_3$  is used in photography.

**Answer: a,b,c,d**



**Watch Video Solution**

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



**Answer: a,b,c**



**Watch Video Solution**



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



Watch Video Solution

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 plumbates (II) solution

**Answer: a,b,c**



**Watch Video Solution**

**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  $CdCO_4$  gives black ppt, with sodium sulphide solution

Answer: a,b,c,d



Watch Video Solution

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

A.  $[Al(OH)_4]^\ominus + NH_4^\oplus \cdot (aq) \xrightarrow{\text{Slighty heat}}$  white precipitate and liberation of ammonia

B.  $Pb_{(aq)}^{2+} + 2Br_{(aq)}^\ominus \rightarrow$  Red precipitate

C.  $BiI_3$  (black precipitate) +  $H_2O(1) \xrightarrow{\Delta}$  orange turbidity

D.  $Fe_{(aq)}^{3+} + K_4[Fe(CN)_6]_{(aq)} \rightarrow$  Blue precipitate

Answer: a,c,d



Watch Video Solution

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



Watch Video Solution

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

- A.  $Cu^{2+}$  salt form soluble complex 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



Watch Video Solution

19. state true or false? Barium chromate is insoluble in dilute acetic acid



Watch Video Solution

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**



**Watch Video Solution**

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

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

A.  $NaOH$

B.  $Pb(NO_3)_2$

C.  $BaSO_4$

D.  $KOH$

Answer: b



Watch Video Solution

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

A. Copper chloride,  $CuCl_2$

B. Mercuridechloride,  $HgCl_2$

C. Zine chloride,  $ZnCl_2$

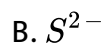
D. Anilmium chloride,  $C_4H_3NH_3^+ Cl^-$

Answer: b



Watch Video Solution

3. A substance on treatment with dil  $H_2SO_4$  liberates a colourless gas which produces (i) turbidity with ba-ryts water and (ii) turns acidified dichromate solution green .The reaction indicates the presence of:

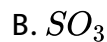
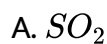


**Answer: c**



**Watch Video Solution**

4. Conc.  $H_2SO_4$  on addition to dry  $KNO_3$  gives brown fumes of :



**Answer: d**



**Watch Video Solution**



5. A white metal sulphide soluble in water is

A.  $CuS$

B.  $Na_2S$

C.  $PbS$

D.  $ZnS$

Answer: b



Watch Video Solution

6. A salt having  $BO_3^{3-}$  on burning with conc  $H_2SO_4$  gives .... edged flame.

A. Green

B. yellow

C. Red

D. White

**Answer: a**



**Watch Video Solution**

7.  $KBr$ , on reaction with conc  $H_2SO_4$  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**



**Watch Video Solution**

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**



**Watch Video Solution**

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

A. Violet

B. yellow

C. Red

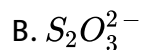
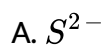
D. Black

**Answer: a**



**Watch Video Solution**

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



**Answer: c**



**Watch Video Solution**

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



Watch Video Solution

12. Preparation 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**



**Watch Video Solution**

**13.**  $H_2S$  and  $SO_2$  can be distinguished by

- A. Limus paper
- B.  $MnO_4^\ominus$
- C.  $Pb(CH_3COO)_2$
- D. none of these

**Answer: c**



**Watch Video Solution**

14. Two test tubes containing a nitrate and a bromide are treated separately with  $H_2SO_4$ ; brown fumes evolved are passed in 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**

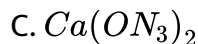
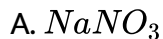


**Watch Video Solution**

15. A colourless solution of a compound gives a precipitate with  $AgNO_3$  solution but no precipitate with a solution of  $Na_2CO_3$ . The action of concentrated  $H_2SO_4$  on the compound liberates a

suffocating reddish brown gas.

The compound is :

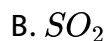
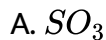


**Answer: d**



**Watch Video Solution**

**16.** A white precipitate insoluble in conc  $\text{HNO}_3$  is formed when aqueous solution of X in  $\text{NaOH}$  is treated with barium chloride and bromine water .The X is





C.  $CO_2$

D. None of these

**Answer: b**



**Watch Video Solution**

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

A.  $Na_2S_4O_4$

B.  $Na_2SO_4$

C.  $Na_2S_4O_6$

D.  $NaOH$

**Answer: b**



**Watch Video Solution**

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  $I_2$  disappears and appearance of pale yellow colour is due to the formation of :

- A.  $I_3^\ominus$  and  $Br_2$  respectively
- B.  $HIO_3$  and  $BrCl$  respectively
- C.  $KI$  and  $BrCl$  respectively
- D.  $I^\ominus$  and  $Br^\ominus$ , respectively

Answer: b



Watch Video 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.  $NO_3^\ominus$  and  $NO_2^\ominus$

C.  $Cl^{\ominus}$  and  $Br^{\ominus}$

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

**Answer: b**



**Watch Video Solution**

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

A.  $Cl^{\ominus}$

B.  $Br^{2+}$

C.  $CO_3^{2+}$

D.  $SO_4^{2-}$

**Answer: d**



**Watch Video Solution**

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

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

**Answer: b**



**Watch Video 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**



**Watch Video Solution**

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

A.  $Br^{\ominus}$  present

B.  $Br^{\ominus}$  absent

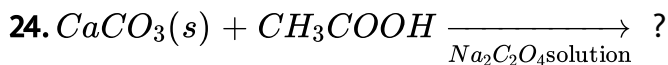
C.  $Cl^{\ominus}$  present

D.  $I^{\ominus}$  present

**Answer: a**



**Watch Video 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

[Watch Video Solution](#)

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

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

A. Cu

B.  $CuBO_2$

C.  $Cu(BO_2)_2$

D. none of these

**Answer: c**



**Watch Video Solution**

2. Potassium chromate solution is added to aqueous solutions of metal nitrate. The yellow precipitate thus obtained are insoluble in acetic acid. These are subjected to flame test, flame colour of individual ppt. is/are:

A. Lilac

B. Apple green

C. Crimson red

D. Golden yellow

**Answer: b**



**Watch Video Solution**

**3. Which gives violet colour with borax ?**



**Answer: b**



**Watch Video Solution**

**4. Which gives violet colour with borax?**



A. Fe

B. Pb

C. Co

D. Mn

**Answer: d**



**Watch Video Solution**

5. A green mass is formed in the charcoal 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**



[Watch Video Solution](#)

6. Carbonates of Ba,Sr and Ca are

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

**Answer: a**



[Watch Video Solution](#)

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

- A. Cr
- B. Ni

C. Pb

D. Mn

**Answer: c**



**Watch Video Solution**

8. Which metal gives blue ash 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**



**Watch Video Solution**

9. A minute of cupric salt is heated 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

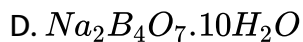
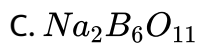
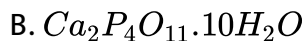
Answer: d



Watch Video 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  $H_2SO_4$  in added to a hot concentrated solution of (Y) white crystals of a weak acid separate out .Hence , the compound (Y) is

- A.  $Na_2SO_4 \cdot 10H_2O$



**Answer: d**



**Watch Video 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



Watch Video Solution

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  $NH_4^{\oplus}$  ions

Answer: a



Watch Video Solution

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**



**Watch Video Solution**

4. Yellow ammonium sulphide solution is a suitable 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**



Watch Video 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



Watch Video 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**



**Watch Video Solution**

7. Which of the following metal sulphides has maximum solubility in water?

A.  $HgS$

B.  $PbS$

C.  $CuS$

D.  $MnS$

**Answer: d**



**Watch Video 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 salphide
- D.  $PbCl_2$  is parially soluble in water

**Answer: a**



**Watch Video Solution**

9.  $As_2S_3$  is

- A. Black
- B. Yellow

C. Orange

D. White

**Answer: d**



**Watch Video 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**



**Watch Video 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**



**Watch Video Solution**

12. Dilute nitric acid is generally not used for the preparation of original solution for the basic radicals because it :

- A. is oxidising agent
- B. is reducing agent

C. forms insoluble nitrates

D. forms soluble nitric

**Answer: a**



**Watch Video Solution**

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

A. CuS

B. ZnS

C. CdS

D. HgS

**Answer: d**



**Watch Video 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**



**Watch Video 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 contains

- A. Lead salt

B. Silver salt

C. Mercurous salt

D. Copper salt

**Answer: c**



**Watch Video Solution**

**16.** A compound is soluble in water. If ammonia is added to aqueous solution of compound, a reddish brown precipitate appears which is soluble in dil. HCl. The compound is a salt of :

A. Aluminium

B. Zinc

C. Iron

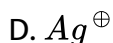
D. Cadmium

**Answer: c**



Watch Video Solution

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



Answer: b



Watch Video Solution

18. All ammonium salts 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**



**Watch Video Solution**

**19.** Manganese salt +  $PbO_2$  + *conc.  $HNO_3$*  → The solution has purple colour

The colour is due to

A.  $HMnO_4$

B. A lead salt

C.  $Mn(NO_3)_2$

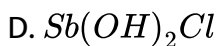
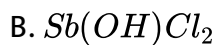
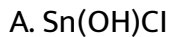
D.  $H_2MnO_4$

**Answer: a**



Watch Video Solution

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



Answer: c



Watch Video Solution

21. Which of the following solution gives precipitate with  $\text{Pb}(\text{NO}_3)_2$  but not with  $\text{Ba}(\text{NO}_3)_2$



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

**Answer: a**



**Watch Video 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

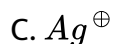
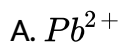
- A. A solution sulphate
- B. KBr or NaBr
- C.  $Ba(NO_3)_2$
- D.  $AgNO_3$

**Answer: d**



**Watch Video Solution**

**23.** The ion that cannot be precipitate by both  $\text{HCl}$  and  $\text{H}_2\text{S}$  is

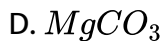
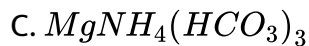
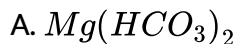


**Answer: b**



**Watch Video Solution**

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

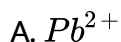


**Answer: b**



**Watch Video Solution**

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



**Answer: c**



Watch Video Solution

26.  $Na_2CO_3$  cannot be used in place of  $(NH_4)_2CO_3$  for the precipitation 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.  $Mg^{2+}$  will be precipitated

Answer: d



Watch Video Solution

27. Disodium hydrogen phosphate is used to test :

- A.  $Mg^{2+}$

B.  $Na^{\oplus}$

C.  $Ca^{2+}$

D. All of these

**Answer: a**



**Watch Video Solution**

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

A.  $Cu^{2+}$  and  $Fe(CN)_4^{4-}$

B.  $Ba^{2+}$  and  $SO_4^{2+}$

C.  $Pb^{2+}$  and  $I^{\ominus}$

D. None of these

**Answer: a**



**Watch Video Solution**

29. Addition of  $\text{SnCl}_2$  to  $\text{HgCl}_2$  gives precipitate:

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

Answer: a



Watch Video Solution

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

- A. Heated with a few drop of cone  $\text{HNO}_3$
- B. Treated with excess of  $\text{NH}_4\text{Cl}$



C. Conccotrated

D. None of these

**Answer: b**



**Watch Video Solution**

**31.** Which of the gives a white precipitate with a solution of  $AgNO_3$ , a 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**



**Watch Video Solution**

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

- A. Nitrates are not decomposed to sulphides
- B. Nitric acid contain nitrogen
- C. Hydrochloric acid is not an oxidising agent
- D. Chlorides are easily converted to sulphides

**Answer: c**



**Watch Video 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**



**Watch Video 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**



**Watch Video 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 iron is:

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

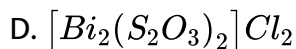
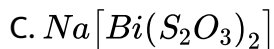
Answer: d



Watch Video Solution

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

- A.  $BiS$
- B.  $Bi_2(S_2O_3)_3$



**Answer: b**



**Watch Video Solution**

**37.** Number of protons in Sodium and Sodium ion are same. True or False



**Watch Video Solution**

**38.** Few drop of  $HNO_3$  are added to II group if before preceeding to group III in order to :

A. Covert  $Fe^{2+}$  to  $Fe^{3+}$

B. Convert  $Fe^{3+}$  to  $Fe^{2+}$

C. ppt group III

D. None of these

**Answer: a**



**Watch Video Solution**

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

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

**Answer: c**



**Watch Video Solution**

40. An inorganic Lewis acid ( $X$ ) shows the following reactions :

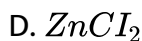
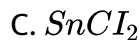
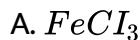
(a) It fumes in moist air.

(b) The intensity of fumes increase when a rod dipped in  $NH_4OH$  is brought near it.

(c) To an aqueous solution of ( $X$ ), addition of  $NH_4Cl$  and  $NH_4OH$  gives a precipitate which dissolves in  $NaOH$  solution.

(d) An acidic solution of ( $X$ ) does not give a precipitate with  $H_2S$ .

Identify ( $X$ ) and give chemical reactions for (a) to (d).



**Answer: b**



**Watch Video Solution**

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

- A. 

X	Y	Z
$Pb(NO_3)_2$	$NO_2$	$Ag_2O$
- B. 

X	Y	Z
$AgNO_3$	$NO$	$[Ag(NH_3)_2]^\oplus$
- C. 

X	Y	Z
$AgNO_3$	$NO_2$	$Ag_2O$
- D. 

X	Y	Z
$AgNO_3$	$NO_2$	$[Ag(NH_3)_2]^\oplus$

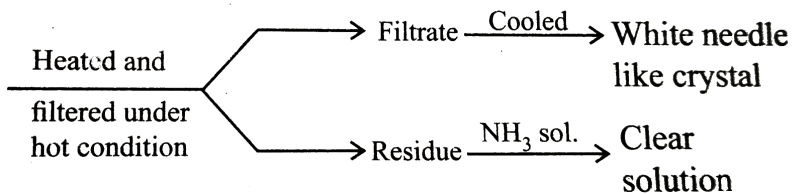
Answer: d



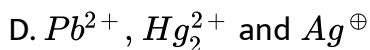
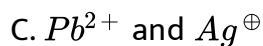
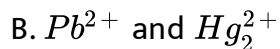
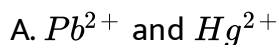
Watch Video Solution



42. Salt mixture  $\xrightarrow{\text{dil. HCl}}$



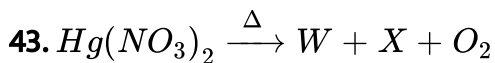
Salt is consisting of cation

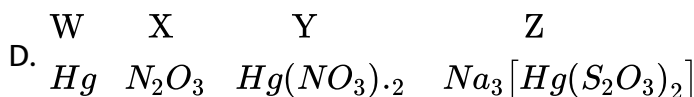
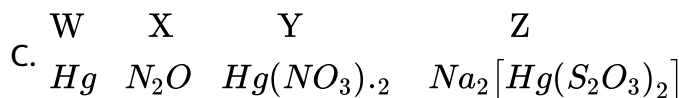
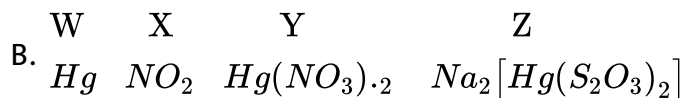
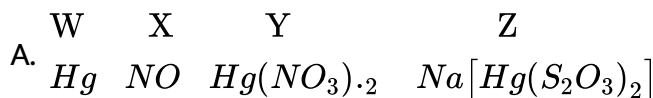
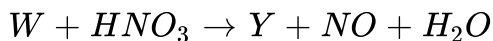


Answer: c



Watch Video Solution





**Answer: B**



**Watch Video Solution**

### 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**



**Watch Video Solution**

2. A metal salt solution forms a yellow precipitate with potassium chromate in acetic acid, a white precipitate with dilute sulphuric acid but does not give precipitate with sodium chloride or iodide. The white precipitate obtained when sodium carbonate is added to the metal salt solution will consist of

A. Lead carbonate

B. basic lead carbonate

C. Barium carbonate

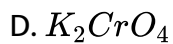
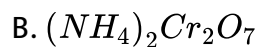
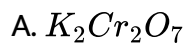
D. Strontium carbonate

**Answer: c**



**Watch Video Solution**

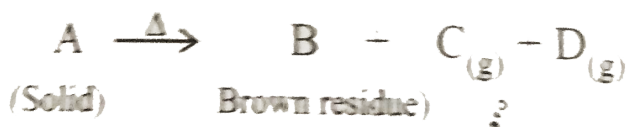
**3. Chemical volcano is produced on heating**



**Answer: b**



**Watch Video Solution**



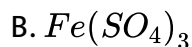
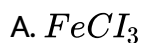
Aqueous  
NaOH

E (dirty green precipitate)  $\xrightarrow[\text{to air}]{\text{On exposure}}$  F

Identify A.

Identify A.

4.

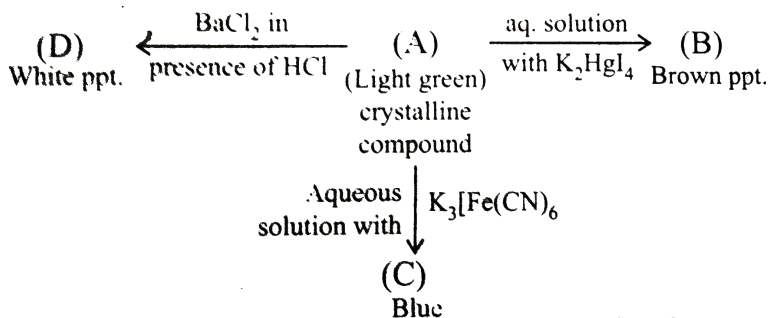


D. All are correct

Answer: c

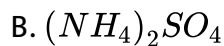
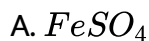


Watch Video Solution



5.

Identify A

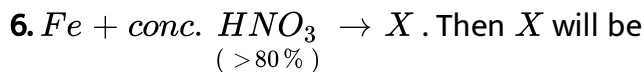


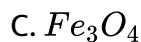
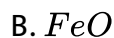
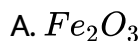
D. All are correct

Answer: c



Watch Video Solution





D. None of these

**Answer: c**



**Watch Video Solution**

### 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 concentration of  $S^{2-}$  for the precipitate of  $CuS$

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**



**Watch Video Solution**

**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**



**Watch Video Solution**

**3. Assertion:** concentrated solution of  $BiCl_3$  can be hydrolysed 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 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



Watch Video Solution

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

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

- A. If 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



Watch Video Solution

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**



**Watch Video Solution**

6. The brown ring complex compound is formulated as

$[Fe(H_2O)_5NO]SO_4$ . The oxidation state of  $Fe$  is

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**



**Watch Video Solution**

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**



**Watch Video Solution**

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

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

- A. If 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



Watch Video Solution

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

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

- A. If 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**



**Watch Video Solution**

### 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 ?



**Watch Video Solution**

 Watch Video Solution

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

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



Watch Video Solution

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



Watch Video Solution

4.

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

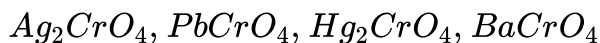
are separately treated with  $AgNO_3$  solution in how many cases is/are white ppt obtained ?



Watch Video Solution



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



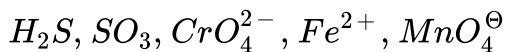
Watch Video Solution

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



Watch Video Solution

7. Find the number of reducing agents from the following



Watch Video Solution

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



Watch Video Solution

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

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



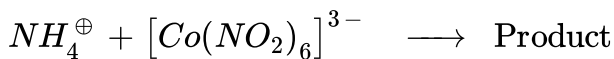
Watch Video Solution

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 ?



Watch Video Solution

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



**Watch Video Solution**

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



**Watch Video Solution**

**13.** How many water molecules(s) is/are present in compound which is used in borax bead test?



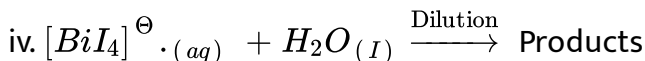
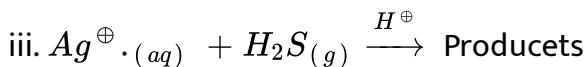
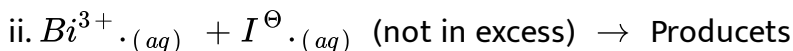
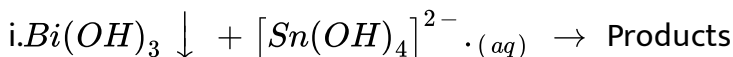
**Watch Video Solution**

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



Watch Video Solution

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



Watch Video Solution

## Exercises (Fill In The Blanks)

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





Watch Video Solution

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.



Watch Video Solution

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.



Watch Video Solution

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.



Watch Video Solution

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



Watch Video Solution

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



Watch Video 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.



Watch Video Solution

8. Precipitation of  $Cd^{2+}$  and  $Cu^{2+}$  takes place in presence of (a)\_\_\_by (b)\_\_\_.



Watch Video Solution

9.  $NH_4Cl$  is added along with  $NH_4OH$  in group (a)\_\_\_to (b)\_\_\_ concentration of (c ) \_\_\_.



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

12.  $NH_4SCN$  gives red colour with (s) \_\_\_\_ due to the formation of (b) \_\_\_\_.



Watch Video Solution

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



Watch Video Solution

14.  $Al(OH)_3$  is precipitate if its produces (a) \_\_\_ is (b) \_\_\_ that  $K_{sp}$



Watch Video Solution

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





[Watch Video Solution](#)

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

[Watch Video Solution](#)

17.  $Fe^{2+}$  gives blue colour, called (a) \_\_\_\_\_ with (b) \_\_\_\_\_ white  $Fe^{2+}$  gives blue colour, called (c) \_\_\_\_\_ with (d) \_\_\_\_\_.

[Watch Video Solution](#)

18. Ferric alum is the indicator in the titration of  $Ag^{\oplus}$  with  $SCN^{\ominus}$  when (a) \_\_\_\_\_ colour appears at the end point .

[Watch Video Solution](#)

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

22.  $AgBr$  is soluble in hypo forming (a) \_\_\_\_\_.



Watch Video Solution

23.  $\text{NO}_3^\ominus$  is detected by (a) \_\_\_\_ when (b) \_\_\_\_ is formed on the addition of  $\text{FeSO}_4$  and cone  $\text{H}_2\text{SO}_4$



Watch Video Solution

24.  $\text{Cl}^\ominus$  is confirmed by (a) \_\_\_\_.



Watch Video Solution

25. Addition of one drop of  $\text{HNO}_3$  in group (III) analysis is to (a) \_\_\_\_.



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

29. Alkaline  $NH_4^+$  salt give brown ppt with  $K_2HgI_4$ ; brown ppt is called \_\_\_\_ of \_\_\_\_.



Watch Video Solution

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



Watch Video Solution

31. Hypo gives (a) \_\_\_\_ppt. with  $AgNO_3$  which changes to (b) \_\_\_\_.



Watch Video 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) \_\_\_\_.



Watch Video Solution

33.  $As_2S_3$  is soluble in  $(NH_4)_2S_2$  (yellow ammonium sulphide) due to the formation of (a) \_\_\_\_.



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

36.  $AgCl$  is soluble in (a) \_\_\_\_ and  $Ag^+$  is present in (b) \_\_\_\_.



Watch Video Solution

37.  $Hg_2Cl_2$  precipitate if (a) \_\_\_\_ is greater than  $K_{sp}(Hg_2Cl_2)$ .



Watch Video Solution

38. Sodium carbonate and mixture are taken in \_\_\_ ratio while preparing sodium carbonate extract



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

41. Microcosmic salt reacts with coloured ions to form characteristic bead which is due to formation



Watch Video Solution

42. The sodium carbonate bead test test is which  $Na_2CO_3$  is along instead of barax it is solution to chromium and \_\_\_\_.



Watch Video Solution

### Exercises (True And False )

1. Turnbull's blue and prussian's blue respectively are  $KFe^{II}[Fe^{III}(CN)_6]$  and  $KFe^{II}(Fe^{III}(CN)_6)$ . True or False?



Watch Video Solution

2.  $K_{sp}$  of  $Mg(OH)_2$  is  $1 \times 10^{-12}$ ,  $0.01M MgCl_2$  will be precipitating at the limiting  $pH$ :



Watch Video Solution



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

$$[A][B] > K_{sp} \text{ True/false}$$



Watch Video Solution

4. Chlorine gas is passed into a solution containing KF, KI and KBr and  $CHCl_3$  is added. The initial colour in  $CHCl_3$  layer is:



Watch Video Solution

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



Watch Video Solution

6. Dilute  $H_2SO_4$  can be used in group of dil HCl. True/False



Watch Video Solution

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



Watch Video Solution

8. Alkaline solution of  $NH_4Cl$  gives ppt with  $K_2HgI_4$



Watch Video 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.



Watch Video Solution

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



Watch Video Solution

 Watch Video Solution

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



Watch Video Solution

12. White ppt of  $PbCl_2$  is soluble in aq  $NH_3$ . (T/F)



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

17. Yellow ammonium sulphide (YAS) can be used to seprate  $SnS$  and  $As_2S_3$  . (T/F)



Watch Video Solution

18.  $\text{NaOH}$  can be used to separate  $\text{Al}(\text{OH})_3$  and  $\text{Zn}(\text{OH})_2$ . (T/F)



Watch Video Solution

19.  $\text{AlCl}_3$  is soluble in excess of  $\text{NaOH}$  forming sodium metaaluminate  $\text{Na}[\text{Al}(\text{OH})_4]$ .



Watch Video Solution

20.  $\text{BaBr}_2$  gives yellow ppt with  $\text{AgNO}_3$  as well as with  $\text{K}_2\text{CrO}_4$ . (T/F)

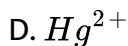
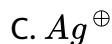
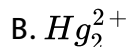
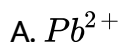


Watch Video Solution

Exercises Archives (Linked Comprehension)

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



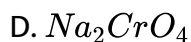
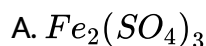
**Answer: a**



**Watch Video Solution**

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

The coloured solution (S) contains

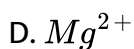


**Answer: d**



**Watch Video Solution**

1. The reagents  $NH_4Cl$  and  $NH_3$  will precipitate :



Answer: b,c



Watch Video Solution

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 thiocyanate

Answer: b,c



Watch Video Solution

3. A solution of colourless salt 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) is (are).

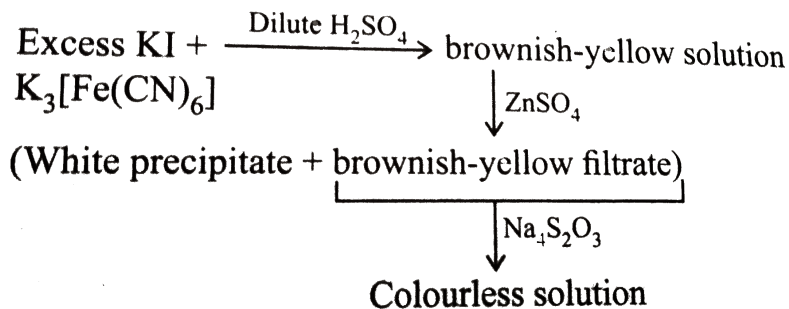


Answer: a,b



Watch Video Solution

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



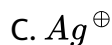
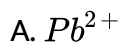
- A. The first reaction is a redox reaction
- B. White precipitate is  $\text{Zn}_4[\text{Fe}(\text{CN})_6]_2$
- C. Addition of filtrate to solution gives blue colour
- D. When precipitate is soluble in NaOH solution

Answer: a,c,d



Watch Video Solution

1. The metal ion(s) which is/are not precipitated when  $H_2S$  is passed with  $HCl$  is

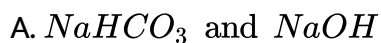
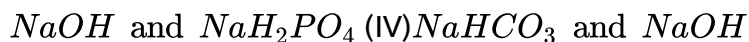
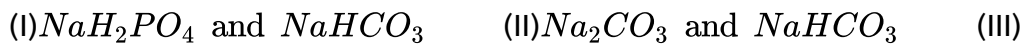


**Answer: c**



**Watch Video Solution**

2. The pair of compounds which cannot exist together in aqueous solution is ,



B.  $Na_2CO_3$  and  $NaHCO_3$

C.  $Na_2CO_3$  and  $NaOH$

D.  $NaHCO_3$  and  $NaCl$

**Answer: a**



**Watch Video Solution**

**3. The compound insoluble in acetic acid is**

A. calcium oxide

B. calcium carbonate

C. calcium oxalate

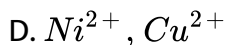
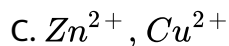
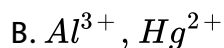
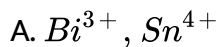
D. calcium hydroxide

**Answer: c**



**Watch Video Solution**

4. which among the following pairs of ions cannot be separated by  $H_2S$  in the presence of dilute  $HCl$  ?

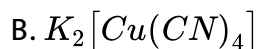
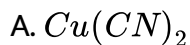


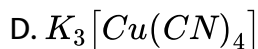
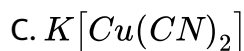
Answer: a



Watch Video Solution

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





**Answer: d**



**Watch Video Solution**

6. An aqueous solution of  $FeSO_4$ ,  $Al_2(SO_4)_3$  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

**Answer: c**



**Watch Video Solution**

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

A.  $Hg_2^{2+}$  salt

B.  $Cr^{+}$  salt

C.  $Ag^{\oplus}$  salt

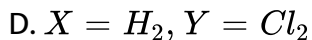
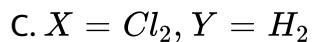
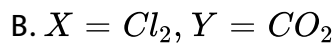
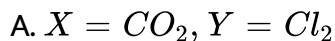
D.  $Pb^{2+}$  salt

**Answer: d**



**Watch Video Solution**

8. A gas X is passed through water to form a saturated solution. The aqueous solution on treatment with  $AgNO_3$  also dissolves magnesium ribbon with the evolution of a colourless gas Y. Identify X and Y



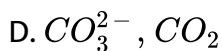
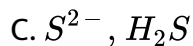
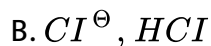
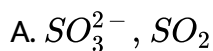
**Answer: c**



**Watch Video Solution**

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

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





**Answer: a**



**Watch Video Solution**

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



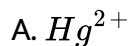
**Answer: b,c**



**Watch Video Solution**

**11.** A metal nitrate reacts with KI solution to give a black precipitate which on addition of excess of KI solution forms an orange coloured

solution. The cation of metal nitrate is :

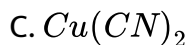
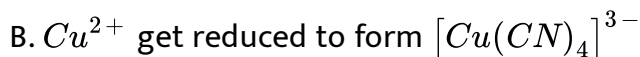
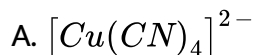


**Answer: b,c**



**Watch Video Solution**

**12.**  $CuSO_4$  decolourises on addition  $KCN$  , the product is

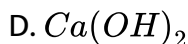
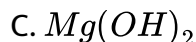
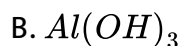
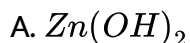


Answer: d



Watch Video Solution

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

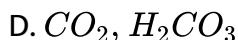
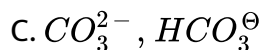
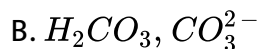
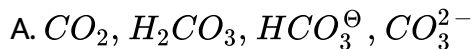


Answer: a



Watch Video Solution

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

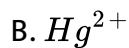
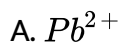


Answer: a



Watch Video Solution

15. A solutionf 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 ions is

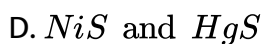
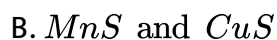
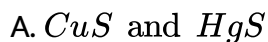


**Answer: b,c**



**Watch Video Solution**

**16.** In an acidified aqueous solution of  $Mn^{2+}$ ,  $Ni^{2+}$ ,  $Cu^{2+}$  and  $hg^{2+}$  ions,  $H_2S$  gas was passed. Precipitates are



**Answer: a**



Watch Video Solution

17. Sulphide does 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



Watch Video Solution

18. Upon treatment with ammonical  $H_2S$  solution, the metal ion precipitating as sulphide is:

A.  $Fe(III)$

B.  $Al(III)$

C.  $Mg(II)$

D.  $Zn(II)$

**Answer: d**



**Watch Video Solution**

**19.** Roasting of sulphides gives the gas X as a by-product. This is a colourless gas with choking smell of burnt sulphur and causes great damage to respiratory organs as a result of acid rain. Its aqueous solution is acidic acts as a reducing agent and its acid has never insolated. The gas X is

A.  $CO_2$

B.  $SO_3$

C.  $H_2S$

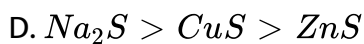
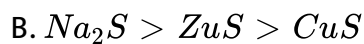
D.  $SO_2$

Answer: d



Watch Video Solution

20. Identify the correct order of solubility in aqueous medium



Answer: b,c



Watch Video Solution



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

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

A. Statement - 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**



**Watch Video Solution**

2. Assertion (A): Sulphur is estimates as  $BaSO_4$  and not as  $MgSO_4$ .

Reason (R) : The ionic radius of  $Mg^{2+}$  is less than that of  $Ba^{2+}$



Watch Video Solution

## Exercises Archives (Integer)

1. Among  $\text{PbS}$ ,  $\text{CuS}$ ,  $\text{HgS}$ ,  $\text{MnS}$ ,  $\text{Ag}_2\text{S}$ ,  $\text{NiS}$ ,  $\text{CoS}$ ,  $\text{Bi}_2\text{S}_3$  and  $\text{SnS}_2$ , total number of black coloured sulphides is :



Watch Video Solution

## Exercises Archives (Fill In The Blanks Ype)

1. If metal ions of group II are precipitated by  $\text{NH}_4\text{Cl}$  and  $\text{NH}_4\text{OH}$  without prior oxidation by concentrated  $\text{HNO}_3$  \_\_\_\_\_ is not completely precipitated



Watch Video Solution

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



**Watch Video Solution**

### 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 ammonia.



**Watch Video Solution**

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



**Watch Video Solution**

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



Watch Video Solution

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 `



Watch Video Solution

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



Watch Video Solution

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 dichromate solution .The solution turn green

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

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



**Watch Video Solution**

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 effervesces with acid giving carbon dioxide. identify A,B and Y and write the equation for the decomposition of X



**Watch Video Solution**

6. What happens when

i. Hydrogen sulphide 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



Watch Video Solution

7. Write the balanced equations for the reactions when a mixture of potassium chlorate, oxalic acid and sulphuric acid is heated.



Watch Video Solution

**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



**Watch Video Solution**

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



**Watch Video Solution**

**10.** A mixture of two salts 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 colouration with ammonium thiocyanate
- iv. The mixture was boiled with potassium hydroxide and the liberated gas was bubbled through an alkaline 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).



[Watch Video Solution](#)

**11.** Write the balanced chemical equation for the following

- i. Silver chloride is reacted with 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



[Watch Video Solution](#)

12. The gas liberated, on heating a mixture of two salts with  $\text{NaOH}$  gives a reddish brown precipitate with an alkaline solution of  $\text{K}_2\text{HgI}_4$  the aqueous solution of the mixture on treatment with  $\text{BaCl}_2$  gives a white precipitate which is sparingly soluble with  $\text{K}_2\text{Cr}_2\text{O}_7$  and concentrated  $\text{H}_2\text{SO}_4$  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.



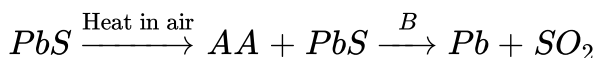
Watch Video Solution

13. Give reason in one two sentence for the following "The hydroxide of aluminum and iron are insoluble in water. However,  $\text{NaOH}$  is used to separate one from other."



Watch Video Solution

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



Watch Video Solution

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

(i). Its aqueous solution gives a brown precipitate on reaction with alkaline  $K_2[HgI_4]$  solution.

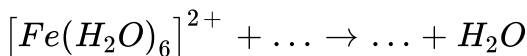
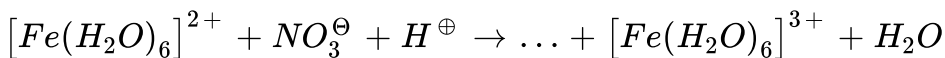
(ii). Its aqueous solution gives a blue colour with  $K_3[Fe(CN)_6]$  solution.

(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.



Watch Video Solution

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



Complete and balance the equations .



Watch Video Solution

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



Watch Video Solution

18. A scalet compound A is treated with concenbrated  $HNO_3$  to gave a chocolate brown precipitate B. The precipitate is filtered and the filtrate is neurralised 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.



Watch Video Solution

19. On gradual addition of  $KI$  solution to  $Bi(NO_3)_3$  solution initially produces a dark brown precipitate which dissolves in excess of  $KI$  to give a clear yellow solution. Given an explanation for above observations.



Watch Video Solution

**20.** Calcium burns in nitrogen to produce a white powder which dissolves in sufficient water to produce a gas (A) and alkaline solution. The solution on exposure to air produce a thin solid layer of (B) on the surface. Identity the compound (A) and (B)



**Watch Video Solution**

**21.** A colourless inorganic salt (*A*) decomposes completely at about  $250^{\circ}\text{C}$  to give only two products (*B*) and (*C*), leaving no residue. The oxide (*C*) is a liquid at room temperature and neutral to litmus paper while the gas (*B*) is a neutral oxide. White phosphorous burns in excess of (*B*) to produce a strong white dehydrating agent. Write balanced equations for the reactions involved in this process.



**Watch Video Solution**

22. Element (A) burns in nitrogen to give an ionic compound, (B) reacts with water to give (C) and (D). A solution of (C) becomes milky on bubbling carbon dioxide. Identify (A),(B),(C) and (D)



Watch Video Solution

23. During the qualitative 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



Watch Video Solution

24. An aqueous solution containing one mole of  $HgI_2$  and two moles of  $NaI$  is orange in colour. On addition of excess  $NaI$  the solution becomes colourless. The orange colour reappears on subsequent addition of  $NaOCl$ . Explain with equation.



Watch Video Solution

25. A white solid is either  $Na_2O$  or  $Na_2O_2$ . A piece of red litmus paper turns white when it is dipped into a freshly made aqueous solution of the white solid.

- Identify the substance and explain the balanced equation.
- Explain what would happen to the red litmus if the white solid were the other compound.



Watch Video Solution

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



Watch Video Solution

27. An aqueous blue-coloured 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 KI in weakly acidic medium turns yellow and produces a white precipitate B. Identify the transition metal ion. write the chemical reactions involved in the formation of A and B.



Watch Video Solution

28. Write the chemical reactions associated with the 'borax' best 'test' of cobalt (*II*) oxide.



Watch Video Solution

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.



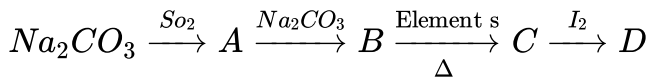
Watch Video Solution

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 with acetic acid is obtained. Neutralizing the solution of B with acetic acid and on obtaining when X of 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.



Watch Video Solution

31. Identify the following:



Also mention the oxidation state of S in all the compounds.



Watch Video Solution

32. (i) Give the constituents of baking powder (ii) Why cake or bread swells on adding baking powder? Write chemical equation.

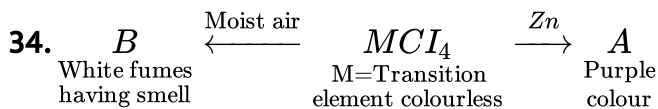


Watch Video Solution

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 precipitated Write the balanced chemical equation .



Watch Video Solution



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



Watch Video Solution

### Ex 8.1

1. Name the natural source of each of the following acid (i) Citric acid.  
 (ii) Oxalic acid. (iii) Lactic acid. (iv) Tartaric acid.



Watch Video Solution

2. An aqueous solution of salt (A) gives a white precipitate (B) with sodium chloride solution. Compound (B) dissolves in hot water and the solution on treatment with sodium iodide give a yellow precipitate (D), and on passing  $H_2S$  through solution (B) gives a

black ppt . (C) . Compound (A) does not give any gas with dil  $HCl$ , but liberates a reddish brown gas on heating identify compounds (A), (B), (C) , and (D) .



**Watch Video Solution**

3. A white amorphous powder (A) when heated gives a colourless gas (B), which turns lime water milky and the residue (C) which is yellow when hot but white when cold. The residue (C) dissolves in dilute  $HCl$  and the resulting solution gives a white precipitate on addition of potassium ferrocyanide solution. (A) dissolves in dilute  $HCl$  with the evolution of a gas which is identical in all respects with (B). The solution of (A) as 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. Compounds (A) to (E) are identified as:



**Watch Video Solution**

4. How can we detect presence of Carbon dioxide in reaction?

 Watch Video Solution

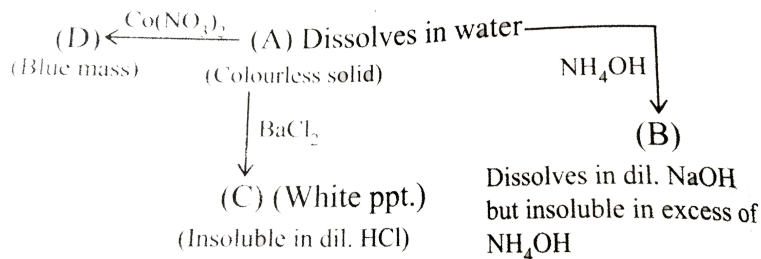
5. Can we directly obtain metals from their sulphide ores?

 Watch Video Solution

6. Calcination is done in excess supply of Air. True/False.

 Watch Video Solution

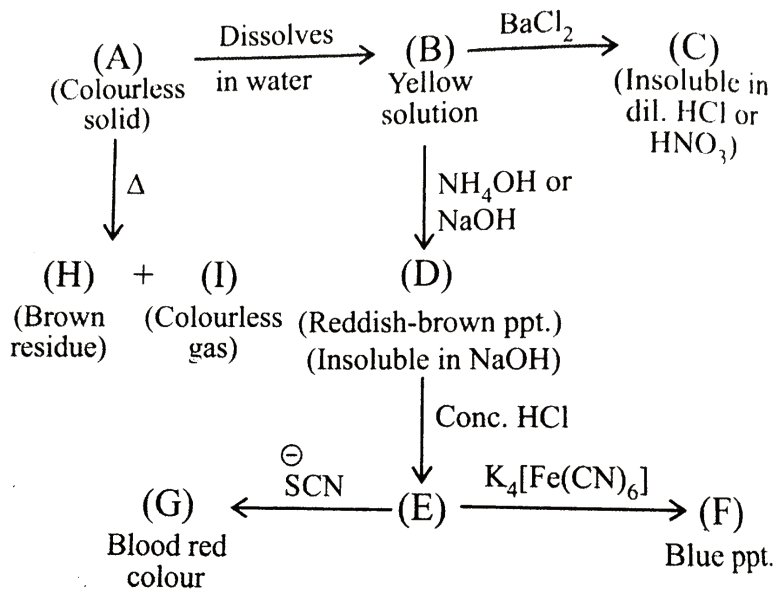
7. Identify A to D





Watch Video Solution

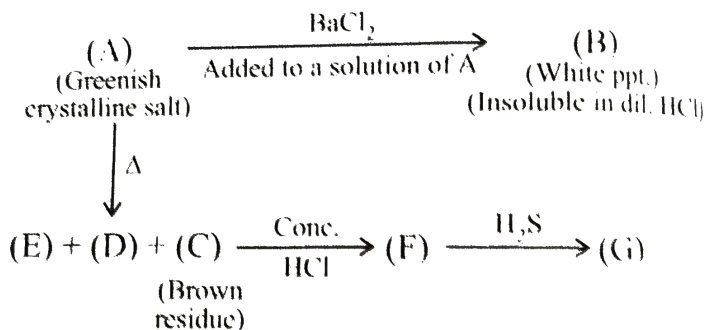
### 8. Identify A



Watch Video Solution

## 9. Identify A to G

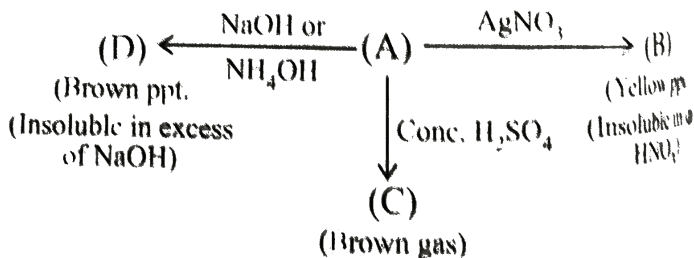
### 9. Identify A to G.



 [Watch Video Solution](#)

## 10. Identify A to D

### 10. Identify A to D.

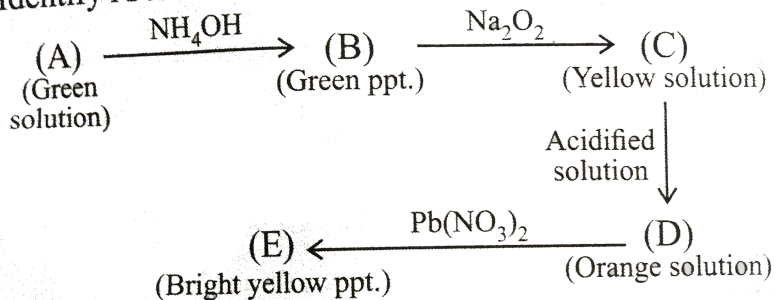


 [Watch Video Solution](#)



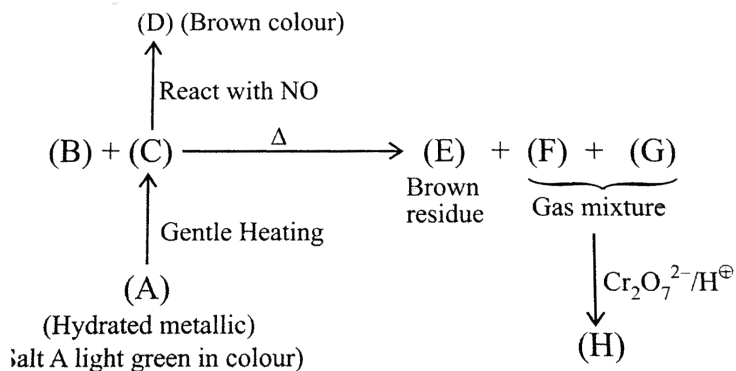
## 11. Identify A to E

Identify A to E.



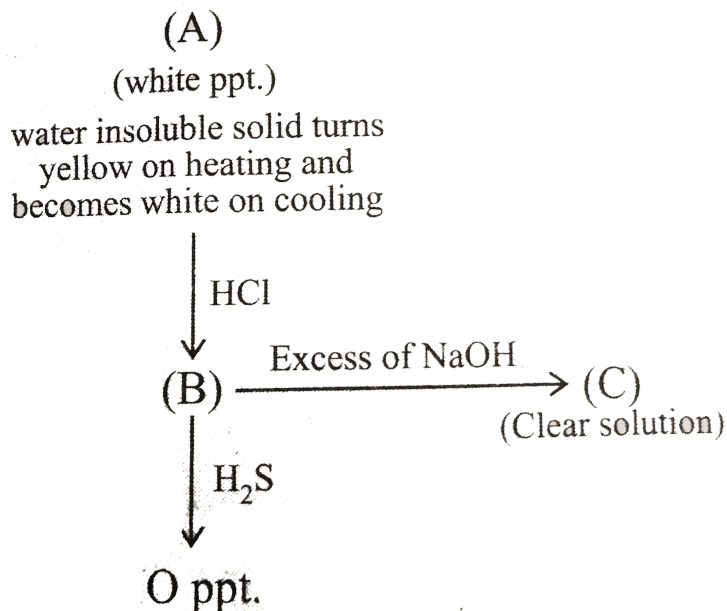
Watch Video Solution

## 12. Identify A to H



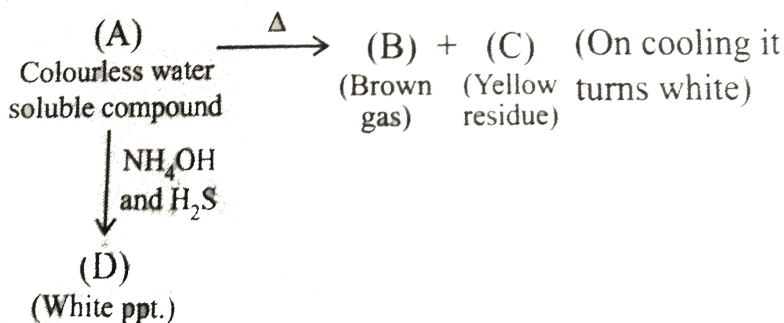
Watch Video Solution

13. Identify A to C



Watch Video Solution

14. Identify A to D





Watch Video Solution

## Ex 8.2

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

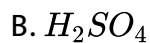
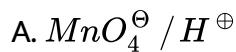
- A.  $SnCl_2$  is added
- B.  $Zn$  is added
- C.  $H_2S$  gas is added
- D. All true

Answer: d



Watch Video Solution

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

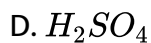
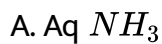


**Answer: a**



**Watch Video Solution**

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

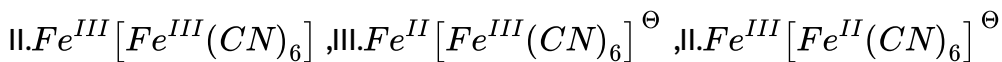
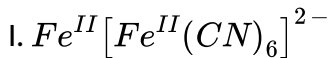


**Answer: c**



**Watch Video Solution**

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



IV

A. I,III

B. I,III

C. III,IV

D. IV,III

Answer: c



Watch Video Solution

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

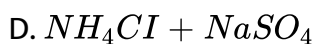
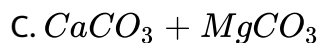
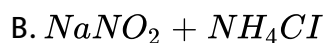
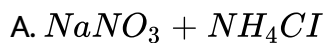
D. X,Y

**Answer: c**



**Watch Video Solution**

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 0.56L at *STP* mixture contain

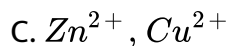
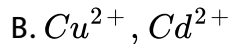
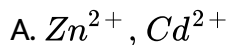


Answer: a



Watch Video Solution

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

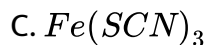
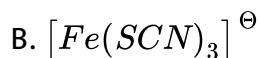
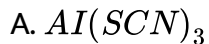


Answer: d



Watch Video Solution

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



Answer: c



Watch Video Solution

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

A. borax

B. micro cosmic salt

C. both (a) and (b)



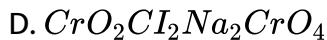
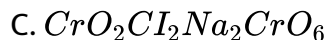
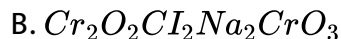
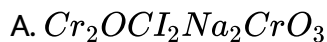
D. none

Answer: c



Watch Video Solution

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

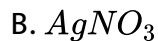
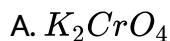


Answer: d



Watch Video Solution

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



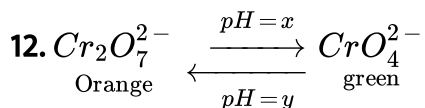
C. both

D. none

Answer: c



Watch Video Solution



The change is based on change in pH, the 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**



**Watch Video Solution**

**13.**  $H_2S$  would separate the following in  $pH < 7$

A.  $Zn^{2+}$ ,  $Co^{2+}$

B.  $Cu^{2+}$ ,  $Cd^{2+}$

C.  $Cu^{2+}$ ,  $Cr^{3+}$

D.  $Cu^{2+}$ ,  $As^{3+}$

**Answer: c**



**Watch Video Solution**

14. Solution of (X) in dil  $HCl + H_2O \rightarrow$  white turbidily (X)  $\xrightarrow{H_2S / HCl}$   
back ppt (Y), (Y) is soluble in

A.  $NaOH$

B. YAS

C.  $HNO_3$

D.  $HCl$

Answer: c

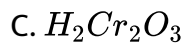


Watch Video Solution

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

A.  $CrO_3$

B.  $H_2CrO_4$

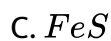
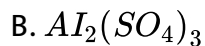


Answer: d



Watch Video Solution

16. There is foul smell in presence of moisture with

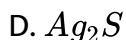
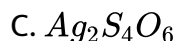
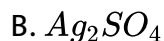
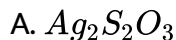


Answer: c



Watch Video Solution

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

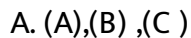


Answer: d



Watch Video Solution

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



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

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

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

**Answer: c**



**Watch Video Solution**

**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

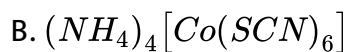
D. 4

Answer: c



Watch Video Solution

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



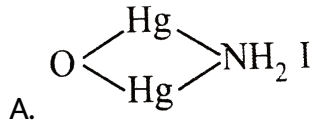
Answer: a



Watch Video Solution

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**



**Watch Video Solution**

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



Watch Video Solution

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

C. all but  $Fe^{2+}$

D. all but  $Fe^{2+}$

Answer: d



Watch Video Solution

24. Aqueous solution of borax reacts with two moles of acid. 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**



**Watch Video Solution**

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

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

B.  $Ag(CN)_2$

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

D.  $Na_2[Ag(CN)_2]$

Answer: a



Watch Video Solution

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

A.  $NaCl$

B.  $KCl$

C.  $BaCl_2$

D.  $CaCl_2$

Answer: b



Watch Video Solution

27. Bromine vapours turns .....paper blue

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

**Answer: a**



**Watch Video Solution**

**28.** Solution of a salt in sulphanilic acid a naphthyl amine give red ppt  
,due to

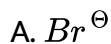
- A.  $Br^{\ominus}$
- B.  $I^{\ominus}$
- C.  $NO_2^{\ominus}$
- D.  $NO_3^{\ominus}$

**Answer: b**



Watch Video Solution

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



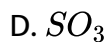
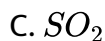
Answer: c



Watch Video Solution

30. The gas which turns mercurous nitrate paper black is



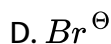


**Answer: a**



**Watch Video Solution**

31. A mixture when heated with dil  $H_2SO_4$  does not evolve brown vapours but when heated with conc  $H_2SO_4$ , brown vapours are obtained. with  $AgNO_3$  so in do not give any precipitate .The mixture contain

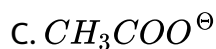
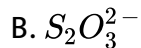


Answer: b



Watch Video Solution

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



Answer: b



Watch Video Solution



33. Nitrite and nitrite 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



Watch Video Solution

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



Watch Video Solution

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  $CrO_2Cl_2$  is obtained. On passing these vapours through a solution of  $NaOH$ , a yellow ppt. due to  $Na_2CrO_4$  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



Watch Video Solution

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



Watch Video Solution

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

A. Sulphite

B. Carbonate

C. Nitrate

D. Bicarbonate

**Answer: a**



**Watch Video Solution**

**38.** Ring test for nitrates conformed by acidifying prepared  $FeSO_4$  so in a brown ring is formed that to the formation of  $[Fe(H_2O)_3NO][SO_4]$   
This test should not be performed for nitrate ion in presence of

A.  $NO_2^\ominus$

B.  $Bi^\ominus$

C.  $I^\ominus$

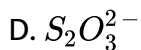
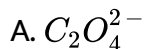
D. All

Answer: d



Watch Video Solution

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

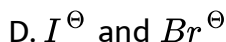
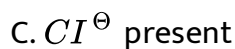


Answer: a



Watch Video Solution

40. When  $Cl_2$  water is added to an aqueous solution of potassium halide in presence of chloroform, a violet colour is obtained upon shaking. This confirms the presence of

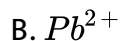
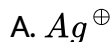


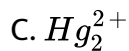
**Answer: a**



**Watch Video Solution**

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





Answer: d



Watch Video Solution

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

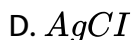
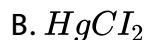
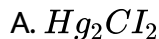


Answer: d



Watch Video Solution

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

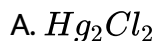


Answer: a



Watch Video Solution

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





C.  $Sn$

D.  $Hg$

Answer: d



Watch Video Solution

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



Watch Video Solution

46. Which of the following ions give coloured aqueous solution?

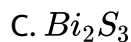
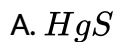


Answer: b



Watch Video Solution

47. Which of the following is insoluble in dil  $HNO_3$



D.  $CuS$

**Answer: A**



**Watch Video Solution**

**48.** Which of the following sulphate is insoluble in  $H_2O$

A.  $CuSO_4$

B.  $PbSO_4$

C.  $CdSO_4$

D.  $Bi(SO_4)_3$

**Answer: b**



**Watch Video Solution**

**49.** Which one has the minimum solubility product ?

A.  $AgCl$

B.  $AlCl_3$

C.  $BaCl_2$

D.  $NH_4Cl$

**Answer: a**



**Watch Video Solution**

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

A. Cobalt salt

B. Zinc salt

C. Nickel salt

D. Manganese salt

**Answer: b**



Watch Video Solution

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

(Cupric ferro cyanide)

A. Blue

B. Green

C. chocolate

D. White

Answer: c



Watch Video Solution

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

A. Blue

B. raddish brown

C. chocolate

D. Green

**Answer: b**



**Watch Video Solution**

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

A. Blue

B. Green

C. chocolate

D. raddish brown

**Answer: a**



**Watch Video Solution**

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

- A. It shows the valency of one and two
- B. It is partly soluble in  $H_2O$
- C. It forms insoluble  $PbCl_2$
- D. It from lead sulphide

Answer: b



Watch Video Solution

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

A. Deep red

B. Blue

C. Brown

D. Green

**Answer: a**



**Watch Video Solution**

**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**





Watch Video Solution

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

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

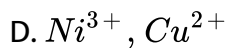
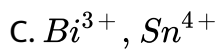
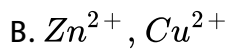
Answer: d



Watch Video Solution

58. which among the following pairs of ions cannot be separated by  $H_2S$  in the presence of dilute  $HCl$ ?

- A.  $Al^{3+}$ ,  $Hg^{2+}$

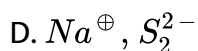
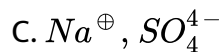
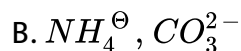
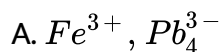


**Answer: c**



**Watch Video Solution**

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



**Answer: a**



**Watch Video Solution**

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

A. NaCl

B.  $(NH_4)_2SO_4$

C.  $(NH_4)_2CO_3$

D.  $NH_4NO_3$

Answer: d



Watch Video Solution

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

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

- B. Oxidise any remaining  $H_2S$
- C. From nitrate which give granular precipitate
- D. Increases ionisation of  $NH_4OH$

**Answer: a**



**Watch Video Solution**

**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

- A.  $MnO_2 \cdot xH_2O$
- B.  $MnO_2$
- C.  $MnO_2 \cdot H_2O$
- D. All

**Answer: d**



**Watch Video Solution**

63.  $Mg$  is not precipitate in group V because

- A.  $MgCO_3$  is soluble in  $H_2O$
- B.  $MgCO_3$  is soluble in  $NH_4Cl$
- C.  $MgCO_3$  is soluble in  $NH_4OH$
- D. All

Answer: b



Watch Video Solution

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**



**Watch Video Solution**

**65.** DMG gives a rosy red crystalline ppt with

A.  $Zn^{2+}$

B.  $Ni^{2+}$

C.  $Cu^{2+}$

D.  $Mn^{2+}$

**Answer: b**



**Watch Video Solution**

66. In the presence of dilute  $HCl$ ,  $H_2S$  results in the precipitation of group II cations but not group IV cations during qualitative analysis. It is due to :

- A.  $HCl$  activate  $H_2S$
- B.  $HCl$  increases conc of  $Cl^-$  due to common ion effect
- C.  $HCl$  decreases conc of  $S^{2-}$  due to common ion effect
- D.  $HCl$  lowers the solubility of  $H_2S$  in soln

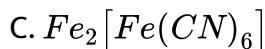
Answer: c



Watch Video Solution

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

- A.  $Fe_4[Fe(CN)_6]_3$
- B.  $Fe_3[Fe(CN)_6]_2$



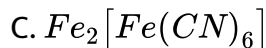
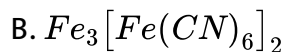
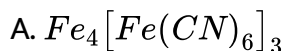
D. All

**Answer: a**



**Watch Video Solution**

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



D. All

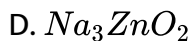
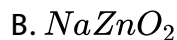
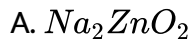
**Answer: b**



**Watch Video Solution**



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



Answer: a



Watch Video Solution

70.  $Br_2$  water in  $NaOH$  so in .Oxidises  $Mn(OH)_2$  to a.... Ppt due to the formation of  $MnO(2)$

A. Black

B. violet

C. Blue

D. white

**Answer: a**



**Watch Video Solution**

71. Brown ppt ,of  $Mn(OH)_2$  on boiling with  $PbO_2$  and cone  $HNO_3$  yields a pink colouration on dilution due to the formation of

A.  $HMnO_4$

B.  $H_2MnO_4$

C.  $Pb(MnO_4)_2$

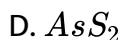
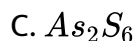
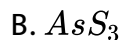
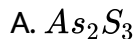
D.  $PbMnO_3$

**Answer: a**



**Watch Video Solution**

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

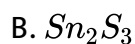


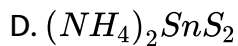
Answer: C



Watch Video Solution

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



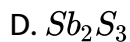
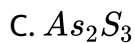


**Answer: c**



**Watch Video Solution**

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



**Answer: d**



**Watch Video Solution**

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

A.  $\text{PbS}$

B.  $\text{HgS}$

C.  $\text{Bi}_2\text{S}_3$

D.  $\text{CdS}$  or  $\text{As}_2\text{S}_3$

Answer: d



Watch Video Solution

76. On passing  $\text{H}_2\text{S}$  gas into first group filtrate sometimes yellow turbidity appears even in the absence of II group 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**



**Watch Video Solution**

77. The sodium carbonate beat test in which  $Na_2CO_3$  is used insteal of borax .it is suitable to chromium and

A. Mn

B. Cu

C. Fe

D. Ni

**Answer: a**



**Watch Video Solution**

78. 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 potassium cobaltinitrite  $K_2Na[Co(NO_2)_6]$

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

**Answer: c**



**Watch Video Solution**

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

1. What is a group reagent ?



**Watch Video Solution**

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



**Watch Video Solution**

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



**Watch Video Solution**

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



**Watch Video Solution**

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



**Watch Video Solution**



6. What is lime water?



Watch Video Solution

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



Watch Video Solution

8. Name the anions which giive brown fumes on reacting with dilute/conc.  $H_2SO_4$



Watch Video Solution

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



Watch Video Solution

 Watch Video Solution

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



Watch Video Solution

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?



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution



[Watch Video Solution](#)

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



[Watch Video Solution](#)

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



[Watch Video Solution](#)

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



[Watch Video Solution](#)

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



[Watch Video Solution](#)

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

25. Can lime water be employed for identification of  $CO_2$  gas?



Watch Video Solution



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

### 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?



Watch Video Solution

2. Why is HCl employed in flame test?



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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?



Watch Video Solution

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



Watch Video Solution



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



**Watch Video Solution**

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



**Watch Video Solution**

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



**Watch Video Solution**

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

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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



Watch Video Solution

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.





Watch Video Solution

9. Why do we Prefer HCl for preparing solution of cations?



Watch Video Solution

10. Is it advisable to use conc. HCl in place of dilute HCl for preparing original solution



Watch Video Solution

11. Why is it essential to boil off  $H_2S$  gas before proceeding to group III?



Watch Video Solution

12. Can the solution be acidified with  $HNO_3$  in group II before passing  $H_2S$  gas?



Watch Video Solution

13. What can it be, if the precipitate of group I is soluble in hot water and insoluble in cold water?



Watch Video Solution

14. Why do we not prefer to prepare original solution of cations in conc.  $H_2SO_4$  or conc.  $HNO_3$ ?



Watch Video Solution

15. Group I filtrate is made moderately acidic before proceeding to group II. Explain.



[Watch Video Solution](#)

16. Why do we add excess of  $NH_4Cl$  and  $NH_4OH$  in the precipitation of group III cations?



[Watch Video Solution](#)

17. Why do we add excess of  $NH_4Cl$  and  $NH_4OH$  in the precipitation of group III cations?



[Watch Video Solution](#)

18. Why is it essential to oxidise ferrous salt to ferric salt in group III?



[Watch Video Solution](#)

19. Can  $NH_4Cl$  be replaced by any other ammonium salt for the precipitation of group III cations?



Watch Video Solution

20. How will you distinguish between ferrous and ferric salts?



Watch Video Solution

21. Can we add  $NH_4OH$  first and  $NH_4Cl$  later in the analysis of group III cations?



Watch Video Solution

22. Can we use  $NaCl$  and  $NaOH$  in place of  $Na_4Cl$  and  $NH_4OH$  in the group III cation precipitation.



Watch Video Solution

23. Why are Zn,MnNi,Co not precipitated n the group III as hydroxides?



Watch Video Solution

24. Why are the group IV cations not precipitated as sulphides on passing  $H_2S$  gas through group II solution?



Watch Video Solution

25. Why is a brownish ppt. obtained in group II even if iron aluminium and chromium are absent?



Watch Video Solution



26. Why sometimes, a black coloured precipitate obtained in group IV even if nickel and cobalt ions are absent?



Watch Video Solution

27. Why excess of  $NH_4OH$  is used in precipitating the sulphides of group IV cations?



Watch Video Solution

28. Why sometimes colloidal precipitate is obtained in group IV?

Comment



Watch Video Solution

29. Why is  $NH_4Cl$  essential in the precipitation of group V cations?



Watch Video Solution

30. Does the excess of  $NH_4Cl$  affect the precipitation of group V cations by  $(NH_4)_2CO_3$ ?



Watch Video Solution

31. Why are all aqueous solution of the cobaltous salts pink?



Watch Video Solution

32. At times  $NH_4OH$  is added before adding  $(NH_4)_2CO_3$  to precipitate group V cations explain.



Watch Video Solution

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



Watch Video Solution

34. Why is  $CaSO_4$  not precipitated on adding ammonium sulphate to a solution containing  $Ca^{2+}$  and  $Sr^{2+}$  ions?



Watch Video Solution

35. At times warming is suggested while precipitating group V cation. Explain.



Watch Video Solution

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



[Watch Video Solution](#)

37. Why do we test group V cations in the order of Ba, Sr, and Ca?



[Watch Video Solution](#)

38. Why is only acetic acid employed for dissolving the group V ppt.?



[Watch Video Solution](#)

39. Sometimes no precipitate is obtained even if group V radicals are present why ?



[Watch Video Solution](#)

40. Calcium oxalate is soluble in dilute HCl. Explain.



[Watch Video Solution](#)



[Watch Video Solution](#)

**41.** Why is a precipitate of magnesium carbonate not formed along with the carbonates of Ba, Sr and Ca in group V?



[Watch Video Solution](#)

**42.** At times a white ppt. is obtained in group VI even in the absence of Mg. explain.



[Watch Video Solution](#)