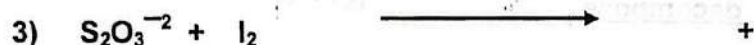


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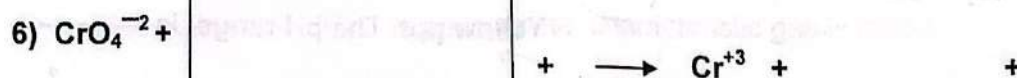
الرجاء كتابة الاسم رباعيا بالعربية

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Total	Bonus
20	5	5	5	5	12	8	60	5

[I] Complete the following equations and the asked question: (20 P)

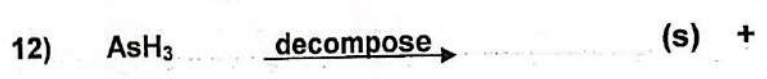
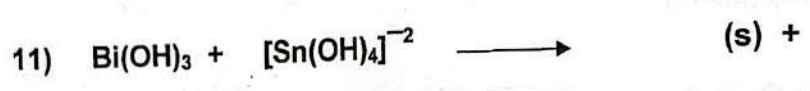
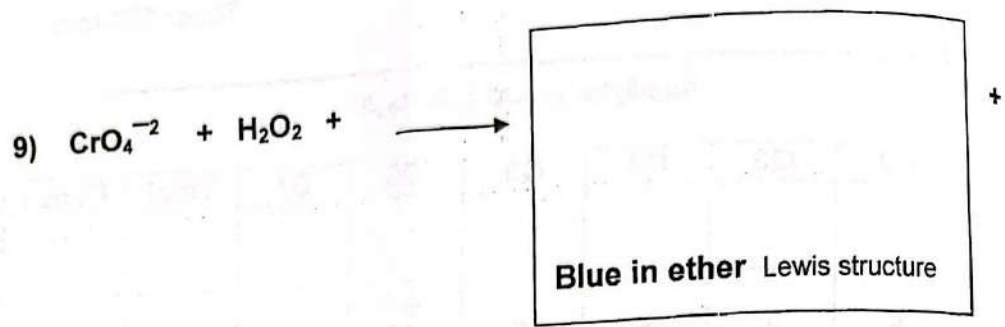
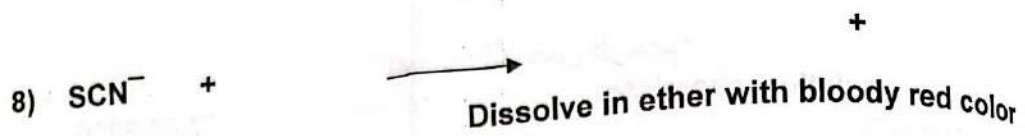


White crystal

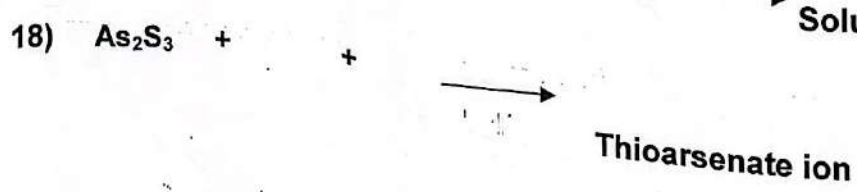
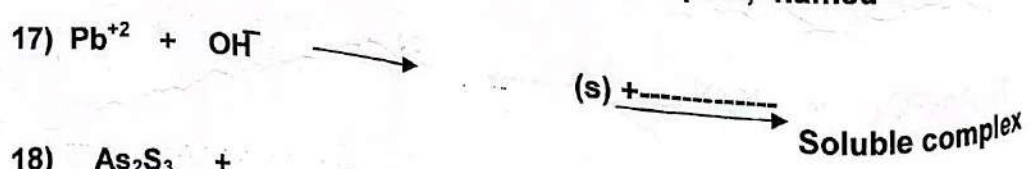
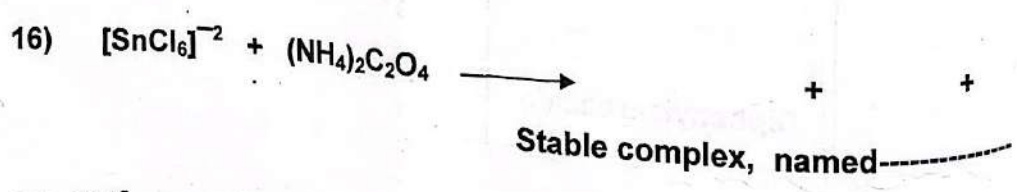
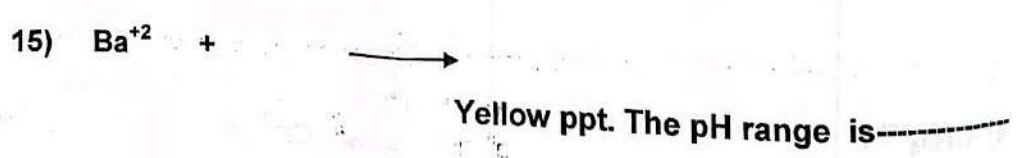


Diphenylcarbazide





Arsenic mirror dissolves in -----
and ----- is a malfunction for test.



[II] Complete the Following as been asked without chemical reaction or explanation, only one suggestion, write chemical formula: (5 P)

- 1) Detection of borate -----
- 2) Dissolution of HgS -----
- 3) Removal of nitric acid from a sample -----
- 4) Formation of Dragendorff's reagent -----
- 5) Precipitation of Sr^{+2} while Ca^{+2} remains soluble -----
- 6) Formula of Prussian blue -----
- 7) Separation of Na^+ and Mg^{+2} -----
- 8) Separation of As_2S_3 and HgS -----
- 9) Precipitating and chelating agent of Ni^{+2} -----
- 10) Formula of brown ring -----

[III] Assign the following Statements with true (T) or false (F): (5 P)

- () The P atom of sodium hypophosphite had +3 oxidation number.
- () MgCO_3 is not precipitated upon addition of ammonium carbonate.
- () $[\text{Fe}(\text{CN})_5\text{NO}]^{-2}$ is used for detection of sulfite in a lewis acid base rxn.
- () Limit test of arsenic is a pharmacopoeial comparison test for arsenic impurities in chemicals.
- () HF reacts with silicate in glass test tubes to cause color changes.
- () Upon addition of HCl to thiocyanate characteristic gas is evolved.
- () NiS dissolves in acidic medium due to high K_{sp} .
- () Tetracyanocuprate (I) ion reacts with H_2S .
- () Permanganate is decolorized when added to H_2O_2 in acidified medium.
- () Sulfide, thiosulfate and sulfite evolved N_2 gas when I_2/N_3^- is added.

[IV] Explain with chemical reaction the following: (5 P)

a- Copper coin test

b- Dissolution of As_2S_5 (Only one suggestion)

[V] Explain limit test using chloride as example. (5 P)

Chemicals for reference tube:

Chemicals for sample tube:

Reaction involved:

Sample is rejected when:

Sample is accepted when:

[VI] Select an ion which described in each case, then Explain with chemical reaction your selection and why you refused others: (12 P)

a) upon passage of H_2S in acidic medium a black ppt, which insoluble in ammonium poly sulfide and when NH_3 conc added a white ppt was formed.

1- Fe^{+2}

2- Bi^{+3}

3- Cd^{+2}

b) Upon addition of iodide a brown colored solution was detected and when HCl (dil) added no ppt was formed but when H_2S passed to acidified solution ppt was formed.

1- Pb^{+2}

2- Mn^{+2}

3- Cu^{+2}

c) Upon addition of acids no gas was evolved, but when iodine azide reagent was added an odorless gas evolved. When Ag^+ added to acidified solution a white ppt formed.

1- Cyanide ion

2- Sulfide ion

3- Thiocyanate ion

Bonus Question: (5 P)

When HCl (dil) added or H_2S passed in acidic or basic buffered solution no ppt was formed. When Oxalate or fluoride added a white ppt formed and when chromate added to acetate buffered solution no ppt formed.

1- Ag^+

2- Co^{+2}

3- Hg^{+2}

4- Ca^{+2}

[VII] Describe only schematic how could the following ions be separated: Ag^+ , Pb^{+2} , Cu^{+2} , Bi^{+3} , As^{+3} , Sn^{+2} , Fe^{+2} , Ni^{+2} , Ca^{+2} , Na^+ , K^+ . (8 P)

Good luck
Dr. Mai Ramadan