

**PRACTICAL CHEMISTRY**  
**Assignment Sheet**

1. State the observations seen in each case (a) to (d) for the tests performed and the conclusions drawn in each case.
  - (a) Test: To solution A, barium chloride solution and dilute hydrochloric acid were added. Conclusions: A contains  $\text{SO}_4^{2-}$  ions.
  - (b) Test: To solution B sodium hydroxide solution was added. Conclusions: B contains  $\text{Fe}^{3+}$  ions.
  - (c) Test: To solution C ammonium hydroxide was added slowly till in excess. Conclusions: C contains  $\text{Cu}^{2+}$  ions.
  - (d) Test: To solution D silver nitrate solution and dilute nitric acid were added. Conclusions: D contains ions. **[2002]**
  
2. State the colour of the residue obtained on cooling when the following carbonates are heated :
  - i] zinc carbonate; ii] lead carbonate; iii] copper carbonate. **[2003]**
  
3. Sodium hydroxide solution is added first in a small quantity, then in excess to the aqueous salt solutions of copper [II] sulphate, zinc nitrate, lead nitrate, calcium chloride and iron [III] sulphate. For each of the aqueous salt solutions, state - a] the colour of the precipitate when NaOH is added in a small quantity; b] the nature of precipitate [i.e. soluble or insoluble] when NaOH is added in excess. **[2004]**
  
4. The questions below refer to the following salt solutions listed A to F:- A: Copper nitrate B: Iron [II] sulphate C: Iron [III] chloride D: Lead nitrate E: Magnesium sulphate F: Zinc chloride.
  - (i) Which two solutions will give a white precipitate when treated with dilute hydrochloric acid followed by barium chloride solution. [i.e. white ppt. insoluble in dil.HCl]
  - (ii) Which two solutions will give a white ppt. when treated with dil.HNO<sub>3</sub> and AgNO<sub>3</sub> soln.
  - (iii) Which soln. will give a white ppt. when either dil. HCl or dil.H<sub>2</sub>SO<sub>4</sub> is added to it.
  - (iv) Which soln. becomes a deep/inky blue colour when excess of ammonium hydroxide is added to it.
  - (v) Which solution gives a white precipitate with excess ammonium hydroxide solution. **[2005]**
  
5.
  - (i) From the list of substances given - Ammonium sulphate, Lead carbonate, Chlorine, Copper nitrate, Ferrous sulphate — State: A substance that turns moist starch iodide paper blue.
  - (ii) State what is observed when excess of ammonia passed through an aqueous solution of lead nitrate.
  - (iii) Give one test each to distinguish between the following pairs of chemicals :-
    - i] Zinc nitrate solution and calcium nitrate solution.
    - ii] Sodium nitrate solution and sodium chloride solution.
    - iii] Iron (III) chloride solution and copper chloride solution.

- (iv) Give a reason why carbon dioxide and sulphur dioxide cannot be distinguished by using lime water. **[2006]**
6. (i) Salts A, B, C, D E undergo reactions i] to v] respectively. Identify the anion present in each salt. i] When  $\text{AgNO}_3$  solution is added to a soln. of A, a white precipitate, insoluble in dilute nitric acid, is formed. ii] Addition of dil.HCl to B produces a gas which turns lead acetate paper black. iii] When a freshly prepared solution of  $\text{FeSO}_4$  is added to a soln. of C and conc. $\text{H}_2\text{SO}_4$  is gently poured from the side of the test-tube, a brown ring is formed. iv] When dil. $\text{H}_2\text{SO}_4$  is added to D a gas is produced which turns acidified  $\text{K}_2\text{Cr}_2\text{O}_7$  soln. from orange to green. v] Addition of dil.HCl to E produced an effervescence. The gas produced turns limewater milky but does not effect acidified  $\text{K}_2\text{Cr}_2\text{O}_7$  soln.
- (ii) How will the addition of barium chloride soln. help to distinguish between dil.HCl and dil. $\text{H}_2\text{SO}_4$  **[2007]**
7. The salt which in solution gives a palegreen ppt. with NaOH soln. and a white ppt. with barium chloride soln. is:  
A Iron (III) sulphate                      B Iron (II) sulphate  
C Iron (II) chloride                        D Iron (III) chloride **[2008]**
8. (i) Carbon dioxide and sulphur dioxide gas can be distinguished by using : A] moist blue litmus paper B] lime water C] acidified potassium dichromate paper D] none of the above.
- (ii) Identify the substance 'R' based on the information given below: The pale green solid 'R' turns reddish brown on heating. Its aqueous solution gives a white precipitate with barium chloride solution. The precipitate is insoluble in mineral acids.
- (iii) Give one chemical test to distinguish between the following pairs of compounds. i] Zinc sulphate soln. & Zinc chloride soln. ii] Iron[II] chloride soln. & Iron[III] chloride soln. iii] Calcium nitrate soln. & Calcium chloride soln.
9. (i) Select the correct answer from A, B, C, D and E - A : Nitroso Iron [II] sulphate B : Iron [III] chloride C : Chromium sulphate D : Lead [II] chloride E : Sodium chloride. The compound which is responsible for the green colour formed when  $\text{SO}_2$  is bubbled through acidified potassium dichromate solution.
- (ii) State your observation - i] A piece of-moist blue litmus paper ii] paper soaked in potassium permanganate solution - is introduced in each case into a jar of sulphur dioxide.
- (iii) Write the equation for the reaction of magnesium sulphate solution with barium chloride solution. **[2010]**
10. Choose from the list of substances - Acetylene gas, aqua fortis, coke, brass, barium chloride, bronze, platinum. An aqueous salt solution used for testing sulphate radical. **[2011]**

11. (i) Name - The gas which turns acidified potassium dichromate clear green.  
(ii) Identify the anion present in the following compounds: i] Compound X on heating with copper turnings and conc. sulphuric acid liberates a reddish brown gas. ii] When a solution of compound Y is treated with silver nitrate solution a white precipitate is obtained which is soluble in excess of ammonium hydroxide solution. iii] Compound Z which on reacting with dilute sulphuric acid liberates a gas which turns lime water milky, but the gas has no effect on acidified potassium dichromate solution. iv] Compound L on reacting with barium chloride solution gives a white precipitate insoluble in dilute hydrochloric acid or dilute nitric acid.
- (iii) State one chemical test between each of the following pairs: i] Sodium carbonate and Sodium sulphite. ii] Ferrous nitrate and Lead nitrate iii] Manganese dioxide & Copper (II) oxide.
- (iv) State one observation: A zinc granule is added to copper sulphate solution.
- (v) Give balanced equation for the reaction : Silver nitrate solution & sodium chloride solution. **[2012]**
12. (i) Give a chemical test to distinguish between: i] NaCl soln. & NaNO<sub>3</sub> soln. ii] HCl gas & H<sub>2</sub>S gas. iii] Calcium nitrate soln. & zinc nitrate soln. iv] Carbon dioxide gas & sulphur dioxide gas.
- (ii) Which one of the following will not produce an acid when made to react with water. A: Carbon monoxide B: Carbon dioxide C: Nitrogen dioxide D: Sulphur trioxide. **[2013]**
13. (i) Distinguish between: Sodium nitrate & sodium sulphite [using dilute sulphuric acid]  
(ii) State your observation: When moist starch iodide paper is introduced into chlorine gas.  
(iii) The flame test with a salt P gave a brick red flame. What is the cation in P.  
(iv) Gas Q turns moist lead acetate paper silvery black. Identify Q. pH of R is 10. What kind of substance is R. **[2014]**
14. (i) Select the gas that has a characteristic rotten egg smell. [ammonia, ethane, hydrogen chloride, hydrogen sulphide, ethyne]  
(ii) State one relevant observation: When hydrogen sulphide gas is passed through lead acetate solution.  
(iii) Identify the anion present in each of the following compounds — A, B, C:  
a] Salt 'A' reacts with conc. H<sub>2</sub>SO<sub>4</sub> producing a gas which fumes in moist air & gives dense fumes with ammonia.  
b] Salt 'B' reacts with dil. H<sub>2</sub>SO<sub>4</sub> producing a gas which turns lime water milky but has no effect on acidified potassium dichromate solution.  
c] When barium chloride soln. is added to salt soln. 'C' a white precipitate insoluble in dil. HCl is obtained.  
(iv) Identify the cation present in each of the following compounds -W, X, Y, Z :  
a] To solution, 'W', ammonium hydroxide is added in minimum quantity first and then in excess. A dirty white precipitate is formed which dissolves in excess to form a clear solution.

- b] To solution 'X' ammonium hydroxide is added in minimum quantity first and then in excess. A pale blue precipitate is formed which dissolves in excess to form a clear inky blue solution.
- c] To solution 'Y' a small amount of sodium hydroxide is added slowly and then in excess. A white insoluble precipitate is formed.
- d] To a salt 'Z' calcium hydroxide solution is added and then the mixture is heated. A pungent smelling gas turning moist red litmus paper blue is obtained. **[2015]**
15. State your observations when:  
Barium chloride solution is mixed with Sodium Sulphate Solution. **[2016]**
16. Identify the cations in each of the following case:
- (i) NaOH solution when added to the Solution (A) gives a reddish brown precipitate.
- (ii)  $\text{NH}_4\text{OH}$  Solution when added to the Solution (B) gives white ppt which does not dissolve in excess.
- (iii) NaOH Solution when added to Solution (C) gives white ppt which is insoluble in excess. **[2016]**
17. Answer the following questions :
- (i) How will you distinguish between Ammonium hydroxide and Sodium hydroxide using copper sulphate solution?
- (ii) How will you distinguish between dilute hydrochloric acid and dilute sulphuric acid using lead nitrate solution? **[2017]**
18. Identify the salts P and Q from the observations given below:
- (i) On performing the flame test salt P produces a lilac coloured flame and its solution gives a white precipitate with silver nitrate solution which is soluble in Ammonium hydroxide solution.
- (ii) When dilute HCl is added to a salt Q, a brisk effervescence is produced and the gas turns lime water milky.  
When  $\text{NH}_4\text{OH}$  solution is added to the above mixture (after adding dilute HCl), it produces a white precipitate which is soluble in excess  $\text{NH}_4\text{OH}$  solution. **[2017]**

