

Exercise # 1

- Q.1** A mixture when heated with conc. H_2SO_4 with MnO_2 brown fumes are formed due to
(1) Br^- (2) NO_3^- (3) Cl^- (4) I^-
- Q.2** Which of the following precipitate does not dissolve even in large excess of NH_4OH [MP PMT 1991]
(1) AgCl (2) AgBr (3) AgI (4) None of these
- Q.3** When Cl_2 water is added to a salt solution containing chloroform, chloroform layer turns violet. Salt contains [CPMT 1982]
(1) Cl (2) I^- (3) NO_3^- (4) S^{2-}
- Q.4** Phosphate radical with ammonium molybdate gives precipitate of which colour
(1) Violet (2) Pink (3) Canary yellow (4) Green
- Q.5** A mixture when heated with dil. H_2SO_4 gives vapours which turn starch iodide paper blue. This is a test for the radical [NCEN.T 1974; CPMT 1977]
(1) Nitrite (2) Iodide (3) Nitrate (4) Nitrite and Iodide
- Q.6** Mark the gas which turns lime water milky
(1) H_2S (2) SO_2 (3) Cl_2 (4) None of these
- Q.7** Starch-iodide paper is used for the test of
(1) Iodine (2) Iodide ion (3) Oxidising agent (4) Reducing agent
- Q.8** In the test of sulphate radical, the white precipitate of sulphate is soluble in
(1) Conc. HCl (2) Conc. H_2SO_4 (3) Conc. HNO_3 (4) None of these
- Q.9** Which of the following pairs of ions. when mixed in dilute solutions may give precipitate [CPMT 1976; NCERT 1987; Kurukshetra CEE 1998]
(1) Na^+ , SO_4^{2-} (2) NH_4^+ , CO_3^{2-} (3) Na^+ , S^{2-} (4) Fe^{3+} , PO_4^{3-}
- Q.10** A solution prepared in conc. HCl sometimes gives white turbidity even in the absence of 1 st group, when water is added to it. It is due to the presence of
(1) Hg^{2+} (2) Sb^{3+} (3) Ag^{3+} (4) Sb^{3+} or Bi^{3+} or both
- Q.11** A precipitate of calcium oxalate will not dissolve in [CPMT 1971]
(1) HCl (2) HNO_3 (3) Aqua-regia (4) Acetic acid
- Q.12** A salt gives bright red colour to the flame. This colour indicates the presence of
(1) Ba^{2+} (2) Sr^{2+} (3) Ca^{2+} (4) Cr^{3+}
- Q.13** Which of the following give white precipitate when HCl is added to its aqueous solution
(1) Hg^+ (2) Mg^{++} (3) Zn^{++} (4) Cd^{++}
- Q.14** When H_2S is passed through in II group some times solution becomes milky. It indicates the presence of [MP PMT 1995]
(1) Acidic salt (2) An oxidising agent (3) Thiosulphate (4) A reducing agent
- Q.15** Which one of the following salt give green coloured flame when the salt is tested by Pt wire
(1) Barium salt (2) Calcium salt (3) Borate (4) Lead salt
- Q.16** Reagent used in the qualitative analysis of IVth group is
(1) HCl (2) H_2S (alkaline) (3) $(\text{NH}_4)_2\text{S}$ (4) None of these
- Q.17** Sodium sulphite on heating with dilute HCl liberates a gas which
(1) Turns lead acetate paper black
(2) Turns acidified potassium dichromate paper green
(3) Burns with a blue flame
(4) Smells like vinegar

- Q.18** When concentrated H_2SO_4 is added to dry KNO_3 , brown fumes evolve. These fumes are
 (1) SO_2 (2) SO_3 (3) NO (4) NO_2
- Q.19** A reagent that can distinguish between a chloride and a peroxide is **[EAMCET 1976]**
 (1) Water (2) Dil. H_2SO_4 (3) KOH solution (4) NaCl
- Q.20** A 0.3 M HCl solution contains the following ions Hg^{++} , Cd^{++} , Sr^{++} , Fe^{++} , Cu^{++} . The addition of H_2S to above solution will precipitate **[CPMT 1973]**
 (1) Cd , Cu and Hg (2) Cd , Fe and Sr (3) Hg , Cu and Fe (4) Cu , Sr and Fe
- Q.21** Which of the following will not produce a precipitate with AgNO_3 solution **[MP PMT 1990]**
 (1) F^- (2) Br^- (3) CO_3^{2-} (4) PO_4^{3-}
- Q.22** When KBr is treated with conc. H_2SO_4 a reddish brown gas is evolved. The evolved gas is **[EAMCET 1978]**
 (1) Bromine (2) Mixture of bromine and HBr
 (3) HBr (4) NO_2
- Q.23** Mark the compound which turns black with NH_4OH **[AFMC 1981; MP PMT 1995]**
 (1) Lead chloride (2) Mercurous chloride (3) Mercuric chloride (4) Silver chloride
- Q.24** A brown ring appears in the test for **[EAMCET 1978; Karnataka CET 1991]**
 (1) Nitrate (2) Nitrite (3) Bromide (4) Iron
- Q.25** The ion that cannot be precipitated by both HCl and H_2S is
 (1) Pb^{2+} (2) Cu^+ (3) Ag^+ (4) Sn^{2+}
- Q.26** The metal that does not give the borax bead test is **[BHU 1987; AFMC 1995]**
 (1) Cr (2) Ni (3) Na (4) Mn
- Q.27** Addition of solution of oxalate to an aqueous solution of mixture of Ba^{++} , Sr^{++} , and Ca^{++} will precipitate
 (1) Ca^{++} (2) Ca^{++} and Sr^{++} (3) Ba^{++} and Sr^{++} (4) All the three
- Q.28** Distinguishing reagent between silver and lead salts is **[MADT Bihar 1984]**
 (1) H_2S gas (2) Hot dilute HCl solution
 (3) NH_4Cl (solid) + NH_4OH solution (4) NH_4Cl (solid) + $(\text{NH}_4)_2\text{CO}_3$ solution
- Q.29** Nessler's reagent is used to detect
 (1) CrO_4^{2-} (2) PO_4^{3-} (3) MnO_4^- (4) NH_4^+
- Q.30** Which gives violet coloured bead in borax bead test **[BHU 1988; MP PET 1997]**
 (1) Fe^{2+} (2) Ni^{2+} (3) Co^{2+} (4) Mn^{2+}
- Q.31** In fifth group, $(\text{NH}_4)_2\text{CO}_3$ is added to precipitate out the carbonates. We do not add Na_2CO_3 because **[AIIMS - 1982]**
 (1) CaCO_3 is soluble in Na_2CO_3
 (2) Na_2CO_3 increases the solubility of fifth group carbonates
 (3) MgCO_3 will be precipitated out in fifth group
 (4) None of these
- Q.32** The composition of 'Golden spangles' is
 (1) PbCrO_4 (2) PbI_2 (3) As_2S_3 (4) BaCrO_4
- Q.33** On adding excess of ammonium hydroxide to a copper sulphate solution
 (1) Blue precipitate of copper hydroxide is obtained
 (2) Black precipitate of copper oxide is obtained (3) A deep blue solution is obtained
 (4) No change is observed
- Q.34** Nessler's reagent is **[CPMT 1997; MP PET/PMT 1998]**
 (1) KHgl_4 (2) $\text{K}_2\text{Hgl}_4 + \text{NH}_4\text{OH}$ (3) $\text{K}_2\text{Hgl}_4 + \text{KOH}$ (4) $\text{KHgl}_4 + \text{NH}_4\text{OH}$
- Q.35** Lead sulphate is soluble **[MP PET 1999]**
 (1) In conc. nitric acid (2) In conc. hydrochloric acid
 (3) In a solution of ammonium acetate (4) In water

- Q.36** A white solid 'A' on heating gives off a gas which turns lime water milky. The residue is yellow when hot but turns white on cooling. This solid 'A' is **[MP PMT 1999]**
 (1) Zinc sulphate (2) Zinc carbonate (3) Lead sulphate (4) Lead carbonate
- Q.37** The colour of CuCr_2O_7 solution in water is green because **[Bihar CEE 1995]**
 (1) $\text{Cr}_2\text{O}_7^{2-}$ ions are green (2) Cu^{++} ions are green
 (3) Both ions are green (4) Cu^{++} ions are blue and $\text{Cr}_2\text{O}_7^{2-}$ ions are yellow
- Q.38** Which of the following substances are soluble in concentrated HNO_3 **[Roorkee Qualifying 1998]**
 (a) BaSO_4 (b) CuS (c) PbS (d) HgS
 Correct answer is
 (1) a, b, c (2) b, c, d (3) a, c, d (4) All
- Q.39** Which of the following cannot give iodometric titrations **[AIIMS 1997]**
 (1) Fe^{3+} (2) Cu^{2+} (3) Pb^{2+} (4) Ag^+
- Q.40** Which of the following reactions with H_2S does not produce metallic sulphide **[AIIMS 1997]**
 (1) ZnCl_2 (2) CdCl_2 (3) COCl_2 (4) CuCl_2
- Q.41** H_2S is passed through an acidified solution of Ag, Cu and Zn. Which forms precipitate **[BHU 1998]**
 (1) Ag (2) Zn (3) Cu (4) None of these
- Q.42** Br_2 vapour turns starch + KI paper to **[AMU 1999]**
 (1) Blue (2) Brown (3) Red (4) None
- Q.43** Fe^{2+} ion can be distinguished by Fe^{3+} ion by **[Delhi PMT 2000]**
 (1) NH_4SCN (2) AgNO_3 (3) BaCl_2 (4) None of these
- Q.44** Concentrated sodium hydroxide can separate a mixture of **[MP PMT 2000]**
 (1) Zn^{2+} and Pb^{2+} (2) Al^{3+} and Zn^{3+} (3) Cr^{3+} and Fe^{3+} (4) Al^{3+} and Cr^{3+}
- Q.45** Which of the following compounds is brown coloured **[AFMC 2001]**
 (1) $\text{Fe}[\text{Fe}(\text{CN})_4]$ (2) $\text{Fe}[\text{Fe}(\text{CN})_6]$ (3) $\text{Fe}_4[\text{Fe}(\text{CN})_6]$ (4) $\text{K}_2\text{Fe}[\text{Fe}(\text{CN})_6]$
- Q.46** Aqueous solution of an inorganic salt on treatment with HCl gives a white precipitate. This solution contains. **[Pb. PMT 2002]**
 (1) Hg_2^{+2} (2) Hg^{2+} (3) Zn^{2+} (4) Cd^{2+}
- Q.47** On performing a borax-bead test with a given inorganic mixture for qualitative analysis, the colour of the bead was found to be emerald green both in oxidising and reducing flame. It indicates the possibility of the presence of **[MP PMT 2001]**
 (1) Co^{+2} (2) Ni^{+2} (3) Cr^{+3} (4) Cu^{+2}
- Q.48** Which reagent is used to remove SO_4^- and Cl^- **[Pb. PMT 2002]**
 (1) BaSO_4 (2) NaOH (3) $\text{Pb}(\text{NO}_3)_2$ (4) KOH
- Q.49** When H_2S is passed through a mixture containing Cu^{+2} , Ni^{+2} , Zn^{+2} in acidic solution then ion will precipitate **[MP PMT 2002]**
 (1) Co^{+2} , Ni^{+2} (2) Ni^{+2} (3) Cu^{+2} , Zn^{+2} (4) Cu^{+2}
- Q.50** Mark the correct statement **[MP PMT 2002]**
 (1) I group basic radicals precipitate as chlorides
 (2) IV group basic radicals precipitate as sulphides
 (3) V group basic radicals precipitate as carbonates
 (4) All the above statements are correct
- Q.51** Group reagent for analytic group IV is **[Kurukshehra CET 2002]**
 (1) $\text{NH}_4\text{Cl} + \text{NH}_4\text{OH}$ (2) $\text{NH}_4\text{Cl} + \text{NH}_4\text{OH} + \text{H}_2\text{S}$ (3) $\text{NH}_4\text{OH} + (\text{NH}_4)_2\text{CO}_3$ (4) $\text{HCl} + \text{H}_2\text{S}$
- Q.52** When H_2S is passed through Hg_2S we get **[AIEEE 2002]**
 (1) HgS (2) $\text{HgS} + \text{Hg}_2\text{S}$ (3) $\text{Hg}_2\text{S} + \text{Hg}$ (4) Hg_2S
- Q.53** How do we differentiate between Fe^{3+} and Cr^{3+} in group III **[AIEEE 2002]**
 (1) By taking excess of NH_4OH solution (2) By increasing NH_4^+ ion concentration
 (3) By decreasing OH^- ion concentration (4) Both (2) and (3)

- Q.54** In borex bead test, which of the following compound is formed [CBSE 2002]
 (1) Meta borate (2) Tetra borate (3) Double oxide (4) Ortho borate
- Q.55** The brown ring test for NO_2 and NO_3 is due to the formation of complex ion with the formula [Karnataka CET (Eng./Med.) 2000]
 (1) $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$ (2) $[\text{Fe}(\text{NO})(\text{CN})_5]^{2+}$ (3) $[\text{Fe}(\text{H}_2\text{OH})_5\text{NO}]^{2+}$ (4) $[\text{Fe}(\text{H}_2\text{O})(\text{NO})_5]^{2+}$
- Q.56** A red solid is insoluble in water. However it becomes soluble if some KI is added to water. Heating the red solid in a test tube results in liberation of some violet coloured fumes and droplets of a metal appear on the cooler parts of the test tube. The red solid is [AIEEE 2003]
 (1) $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$ (2) HgI_2 (3) HgO (4) Pb_3O_4
- Q.57** $[\text{X}] + \text{H}_2\text{SO}_4 \rightarrow [\text{Y}]$ a colourless gas with irritating smell
 $[\text{Y}] + \text{K}_2\text{Cr}_2\text{O}_7 + \text{H}_2\text{SO}_4 \rightarrow$ green solution
 $[\text{X}]$ and $[\text{Y}]$ is [IIT JEE 2003]
 (1) SO_3^{2-} , SO_2 (2) Cl^- , HCl (3) S^{2-} , H_2S (4) CO_3^{2-} , CO_2
- Q.58** In the analysis of basic radicals. the group reagent H_2S gas is generally used in the groups [MP PMT 2003]
 (1) I and II groups (2) II and III groups (3) III and V groups (4) II and IV groups
- Q.59** Addition of SnCl_2 to HgCl_2 gives ppt [BVP 2003]
 (1) White turning to red (2) White turning to gray
 (3) Black turning to white (4) None of these
- Q.60** Hemoglobin is a complex of
 (1) Fe^{3+} (2) Fe^{2+} (3) Fe^{4+} (4) Cu^{2+}
- Q.61** The potassium fericyanide produces on ionization [CPMT 2003]
 (1) 2 ions (2) 1 ion (3) 3 ions (4) 4 ions
- Q.62** Precipitate of group IV cations takes place when H_2S is [Rajasthan PET 2003]
 (1) Highly ionised (2) Less ionised (3) Not ionised (4) None of these
- Q.63** A solution of a salt in dilute sulphuric acid imparts deep blue colour with starch iodine solution it confirms the presence of which of the following [MP PET 2003]
 (1) NO_2^- (2) I^- (3) NO_3^- (4) CH_3COO^-
- Q.64** An aqueous solution of a salt gives black ppt upon treatment with KI solution. The ppt dissolves in excess of KI giving orange coloured solution. Hence cation of the salt is [JEE 2005]
 (1) Hg^{2+} (2) Cu^{2+} (3) Pb^{2+} (4) Bi^{3+}

Answer Key

Exercise

Qus.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Ans.	1	3	2	3	1	2	1	4	4	4	4	2	1	2	1	2	2	4	2	1	1	1	2	1	2
Qus.	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50
Ans.	3	4	2	4	4	3	2	3	3	1	2	4	2	3	3	3	1	1	3	2	1	3	3	4	4
Qus.	51	52	53	54	55	56	57	58	59	60	61	62	63	64											
Ans.	4	3	4	1	3	2	3	4	2	2	4	4	4	4											