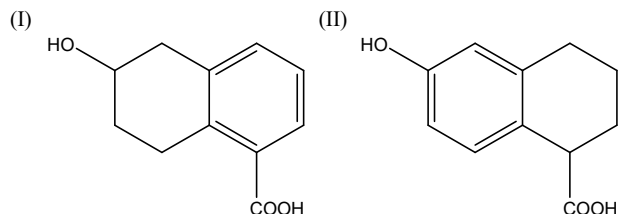


Principles Related to Practical Chemistry

1. The group reagent for the test of alcohols is:

- (1) Ceric ammonium nitrate
- (2) Schiff's reagent
- (3) Hinsberg's reagent
- (4) Bromine water

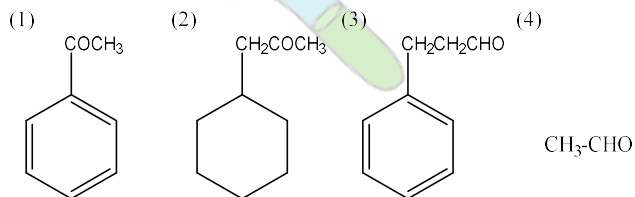
2. The following two compounds I and II can be distinguished by using reagent



- (a) aq. NaHCO_3
- (b) Neutral FeCl_3
- (c) Blue litmus solution
- (d) HCl/ZnCl_2 anhydrous

- (1) (a) or (c)
- (2) (b) or (d)
- (3) (d) or (a)
- (4) (c) or (d)

3. Which of the following compound will not react with I_2/OH^- ?



4. Which of the following will not give positive test with CHCl_3/KOH ?

- (1) $\text{CH}_3\text{-CH}_2\text{-NH-CH}_3$
- (2) $\text{CH}_3\text{-CH}_2\text{-CH}_2\text{-NH}_2$
- (3) $\text{C}_6\text{H}_5\text{-NH}_2$ (Aniline)
- (4) $\text{CH}_3\text{-CH(CH}_3\text{)-NH}_2$

5. A positive carbylamine test is given by:

- (1) N,N-dimethylaniline
- (2) 2,4-dimethylaniline

- (3) N-methyl-o-methylaniline
- (4) N-methylaniline

6. The Hinsberg's method is used for:

- (1) Preparation of primary amines
- (2) Preparation of secondary amines
- (3) Preparation of tertiary amines
- (4) Separation of amine mixtures

7. Which of the following would produce effervescence with sodium bicarbonate?

- (1) Benzene sulphonic acid
- (2) Benzoic acid
- (3) Picric acid
- (4) All of these

8. A compound is heated with zinc dust and ammonium chloride followed by addition of the Tollens' reagent. Formation of silver mirror indicates the presence of following group:

- (1) -CHO
- (2) -CO-
- (3) -NO_2
- (4) -NH_2

9. In the Lassaigne's test, one of the organic compounds gave red colour with FeCl_3 . Compound can be:

- (1) Na_2S
- (2) NH_2CSNH_2
- (3) $\text{C}_6\text{H}_5\text{Cl}$
- (4) NaCN

10. Lassaigne's test is used in qualitative analysis to detect:

- (1) Nitrogen
- (2) Sulphur
- (3) Chlorine
- (4) All of these

11. The compound that does not give a blue colour in Lassaigne's test is:

- (1) $\text{C}_6\text{H}_5\text{-NH}_2$
- (2) CH_3CONH_2
- (3) $\text{NH}_2\text{-NH}_2$
- (4) $\text{C}_6\text{H}_5\text{-NO}_2$

12. Nitrogen containing organic compound when fused with sodium metal forms:

- (1) NaNO_2
- (2) NaCN
- (3) NaNH_2
- (4) Na_2CO_3

13. The sodium fusion extract of an organic compound on acidification with acetic acid and addition of lead acetate solution gives a black precipitate. The organic compound contains:

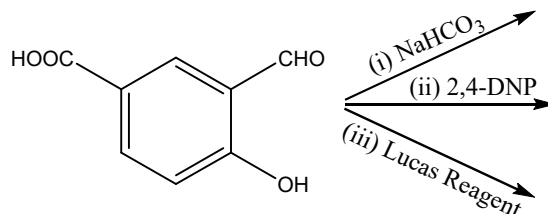
- (1) Nitrogen
- (2) Halogen
- (3) Sulphur
- (4) Phosphorus

14. Match the compounds given in column - I with the reagents (which can distinguish the compounds) given in column - II:

Column - I	Column - II
(A) $\text{CH}_3\text{-CHO}$ & $\text{CH}_3\text{-CO-CH}_3$	(p) Tollens' reagent
(B) 4-Nitrophenol & Anisole	(q) I_2/NaOH
(C) $\text{CH}_3\text{-CH(OH)-CH}_3$ & $\text{CH}_3\text{-CO-CH}_3$	(r) Lucas reagent
(D) $\text{CH}_3\text{-CH}_2\text{-CHO}$ & $\text{CH}_3\text{-CHO}$	(s) Neutral FeCl_3

- (1) (A)-(p), (B)-(s), (C)-(r), (D)-(q)
- (2) (A)-(p), (B)-(q), (C)-(r), (D)-(s)
- (3) (A)-(s), (B)-(q), (C)-(r), (D)-(p)
- (4) (A)-(q), (B)-(p), (C)-(s), (D)-(r)

15. Observe the following compound and select +ve and -ve test respectively:



- (1) + + -
- (2) + + +
- (3) - + -
- (4) - - +

16. Which of the following amine does not react with Hinsberg's reagent?

- (1) $\text{CH}_3\text{CH}_2\text{NH}_2$
- (2) $(\text{CH}_3\text{CH}_2)_2\text{NH}$
- (3) $(\text{CH}_3\text{CH}_2)_3\text{N}$
- (4) All of these

17. Lassaigne's test for the detection of nitrogen will fail in the case of:

- (1) $\text{C}_6\text{H}_5\text{NHCOPh}$
- (2) $(\text{CH}_3)_2\text{C=N-NHCONH}_2$
- (3) $\text{NH}_2\text{-NH}_2$
- (4) $\text{C}_6\text{H}_5\text{-NHNH}_2$

18. An organic compound with 68.9% of C and 4.92% of H, is aromatic and gives CO_2 with NaHCO_3 . The organic compound is:

- (1) Benzoic acid
- (2) Phenol
- (3) Terephthalic acid
- (4) Adipic acid

19. Which of the following reagents may be used to distinguish between phenol and benzoic acid?

- (1) Aqueous NaOH
- (2) Tollens' reagent
- (3) Hinsberg's reagent
- (4) Neutral FeCl_3

20. Among the following the one that gives positive iodoform test upon reaction with I_2 and NaOH is:

- (1) $\text{CH}_3\text{CH}_2\text{CH(OH)CH}_2\text{CH}_3$
- (2) $\text{C}_6\text{H}_5\text{CH}_2\text{CH}_2\text{OH}$
- (3) $\text{CH}_3\text{-CH(CH}_3\text{)-CH}_2\text{OH}$
- (4) PhCH(OH)CH_3

21. In conversion of 2-butanone to propanoic acid which reagent is used:

- (1) DIBAL-H/H₂O
- (2) Fehling's reagent
- (3) NaOH, I₂/H⁺
- (4) Tollens' reagent

22. Silver mirror test is given by which one of the following compounds?

- (1) Acetaldehyde
- (2) Acetone
- (3) 2-Butanone
- (4) Benzophenone

23. On heating an aliphatic primary amine with chloroform and ethanolic potassium hydroxide, the organic compound formed is:

- (1) an alkanol
- (2) an alkanediol
- (3) an alkyl cyanide
- (4) an alkyl isocyanide

24. Iodoform can be prepared from all except:

- (1) Ethyl methyl ketone
- (2) Isopropyl alcohol
- (3) 3-Methyl-2-butanone
- (4) Isobutyl alcohol

25. The formula mass of Mohr's salt is 392. The iron present in it is oxidised by KMnO₄ in acidic medium. The equivalent mass of Mohr's salt is:

- (1) 392
- (2) 31.6
- (3) 278
- (4) 156

26. How many moles of acidified FeSO₄ can be completely oxidised by one mole of KMnO₄?

- (1) 10
- (2) 5
- (3) 6
- (4) 2

27. What is the strength in g per litre of a solution of sulphuric acid, 12 mL of which neutralise 15 mL of N/10 sodium hydroxide solution?

- (1) 3.218

- (2) 2.89
- (3) 28.9
- (4) 6.125

28. 25 mL of N/10 caustic soda solution exactly neutralises 20 mL of an acid solution containing 7.875 g of acid per litre. The equivalent mass of the acid will be:

- (1) 22
- (2) 88
- (3) 63
- (4) 91

29. A sample of Na₂CO₃ · H₂O weighing 0.62 g is added to 100 mL of 0.1 N sulphuric acid. The resulting solution be (At. mass H=1, C=12, O=16, Na=23, S=32):

- (1) Weakly acidic
- (2) Basic
- (3) Neutral
- (4) Strongly acidic

30. How many grams of NaHCO₃ are required to neutralise 1 mL of 0.0902 N an acid?

- (1) 8.4×10^{-2} g
- (2) 1.5×10^{-3} g
- (3) 7.58×10^{-3} g
- (4) 1.07×10^{-3} g

31. 1 mol H₂SO₄ will exactly neutralise:

- (a) 2 mol of ammonia (b) 1 mol of Ba(OH)₂
- (c) 0.5 mol of Ba(OH)₂ (d) 2 mol of KOH
- (1) (a) only
- (2) (a) and (b) only
- (3) (a) and (c) only
- (4) (a), (b) and (d) only

32. How many moles of MnO₄⁻ ions will react with 1 mole of ferrous oxalate in acidic medium?

- (1) 1/5
- (2) 2/5
- (3) 3/5
- (4) 5/3

33. KMnO₄ reacts with oxalic acid according to the equation: $2\text{MnO}_4^- + 5\text{C}_2\text{O}_4^{2-} + 16\text{H}^+ \rightarrow 2\text{Mn}^{2+} +$

$10\text{CO}_2 + 8\text{H}_2\text{O}$. Here, 20 mL of 0.1 M KMnO_4 is equivalent to:

- (1) 120 mL of 0.25 M $\text{H}_2\text{C}_2\text{O}_4$
- (2) 150 mL of 0.1 M $\text{H}_2\text{C}_2\text{O}_4$
- (3) 50 mL of 0.1 M $\text{H}_2\text{C}_2\text{O}_4$
- (4) 50 mL of 0.2 M $\text{H}_2\text{C}_2\text{O}_4$

34. In an oxidation-reduction, MnO_4^- ion is converted to Mn^{2+} , what is the number of equivalents of KMnO_4 (mol. wt. = 158) present in 250 mL of 0.04 M KMnO_4 solution?

- (1) 0.02
- (2) 0.05
- (3) 0.04
- (4) 0.07

35. 50 mL of a solution containing 2 g of NaOH in 500 mL will require for complete neutralisation:

- (1) 10 mL decinormal HCl
- (2) 20 mL decinormal HCl
- (3) 50 mL decinormal HCl
- (4) 25 mL decinormal HCl

36. Which of the following acids is added in the titration of oxalic acid and potassium permanganate?

- (1) HNO_3
- (2) HCl
- (3) CH_3COOH
- (4) H_2SO_4

37. An aqueous solution of 6.3 g of oxalic acid dihydrate is made up to 250 mL. The volume of 0.1 N NaOH required to completely neutralise 10 mL of this solution is:

- (1) 40 mL
- (2) 20 mL
- (3) 10 mL
- (4) 4 mL

38. 0.5 g of an oxalate was dissolved in water and the solution made to 100 mL. On titration 10 mL of this solution required 15 mL of N/20 KMnO_4 . The percentage of oxalate in the sample will be:

- (1) 76%
- (2) 66%
- (3) 22%

(4) 58%

39. How many mL of a 0.05 M KMnO_4 solution are required to oxidise 2.0 g of FeSO_4 in a dilute solution (acidic)?

- (1) 52.7 mL
- (2) 33.3 mL
- (3) 28.6 mL
- (4) 22.8 mL

40. Given below are two statements:

Assertion (A): In the titration of HCl against NaOH, phenolphthalein is used as suitable indicator.

Reason (R): Phenolphthalein is pink coloured in basic medium.

In the light of above statements, choose the most appropriate answer from the options given below:

- (1) Both (A) and (R) are correct, and (R) is correct explanation
- (2) Both (A) and (R) are correct, but (R) is not correct explanation
- (3) (A) is correct, but (R) is incorrect
- (4) (A) is incorrect, but (R) is correct

41. Given below are two statements:

Assertion (A): Equivalent mass of KMnO_4 is equal to one-fifth of its molecular mass when it acts as an oxidising agent in acidic medium.

Reason (R): Oxidation number of Mn in KMnO_4 is +7.

- (1) Both (A) and (R) are correct, and (R) is correct explanation
- (2) Both (A) and (R) are correct, but (R) is not correct explanation
- (3) (A) is correct, but (R) is incorrect
- (4) (A) is incorrect, but (R) is correct

42. A gas is obtained by addition of dil. HCl to a mixture which turns lead acetate paper black. It is:

- (1) SO_2
- (2) CO_2
- (3) H_2S
- (4) NO_2

43. The two colourless gases on mixing formed dense white fumes, these are:

- (1) NH_3 and O_2
- (2) SO_2 and steam
- (3) NH_3 and HCl
- (4) NH_3 and HNO_2

44. Which of the following pairs of acid radicals is decomposed by dil. HCl ?

- (1) NO_2^- , I^-
- (2) SO_3^{2-} , CO_3^{2-}
- (3) CO_3^{2-} , Cl^-
- (4) Br^- , I^-

45. Which of the following gives smell of rotten eggs with dil. H_2SO_4 ?

- (1) CO_3^{2-}
- (2) SO_3^{2-}
- (3) S^{2-}
- (4) NO_2^-

46. A mixture on heating with conc. H_2SO_4 and MnO_2 liberates reddish brown vapours of:

- (1) Br_2
- (2) NO
- (3) I_2
- (4) Cl_2

47. When silver nitrate is added to solution of 'A' a yellow ppt is formed which is partially soluble in excess of NH_4OH solution. 'A' is:

- (1) Cl^-
- (2) Br^-
- (3) I^-
- (4) F^-

48. Ag^+ , Hg_2^{2+} and Pb^{2+} are grouped together in first group because they form insoluble:

- (1) Sulphates
- (2) Chlorides
- (3) Hydroxides
- (4) Carbonates

49. Which gives blood red colour with potassium thiocyanate?

- (1) Fe^{3+}
- (2) Cu^{2+}

(3) Cd^{2+}

(4) Sn^{2+}

50. In alkaline medium dimethyl glyoxime is used for the test of:

- (1) Cobalt
- (2) Zinc
- (3) Manganese
- (4) Nickel

51. Which of the following sulphides is yellow?

- (1) ZnS
- (2) CdS
- (3) NiS
- (4) CoS

52. An alkaline solution of potassium mercuric iodide is known as:

- (1) Nessler's reagent
- (2) Lassaigne's reagent
- (3) Fehling's reagent
- (4) Lucas reagent

53. In borax bead test, which of the following compound is formed?

- (1) Meta borate
- (2) Tetra borate
- (3) Borazine
- (4) Ortho borate

54. The brown colour during the test of NO_3^- is due to the formation of complex ion with the formula:

- (1) $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$
- (2) $[\text{Fe}(\text{NO})(\text{CN})_5]^{2+}$
- (3) $[\text{Fe}(\text{H}_2\text{O})_5\text{NO}]^{2+}$
- (4) $[\text{Fe}(\text{H}_2\text{O})(\text{NO})_5]^{2+}$

55. A red solid is insoluble in water. However, it becomes soluble if 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:

- (1) $(\text{NH}_4)_2\text{Cr}_2\text{O}_7$
- (2) HgI_2
- (3) HgO
- (4) Pb_3O_4

56. Which reagent is used to remove SO_4^{2-} and Cl^- from solution?

- (1) $\text{Ba}(\text{OH})_2$
- (2) NaOH
- (3) $\text{Pb}(\text{NO}_3)_2$
- (4) KOH

57. Fe^{2+} ion can be distinguished from Fe^{3+} ion by:

- (1) NH_4SCN
- (2) AgNO_3
- (3) BaCl_2
- (4) NaOH

58. An aqueous solution of an inorganic salt on treatment with HCl gives a white precipitate. This solution contains:

- (1) Hg_2^{2+}
- (2) Hg^{2+}
- (3) Zn^{2+}
- (4) Cd^{2+}

59. When H_2S is passed through a mixture containing Cu^{2+} , Ni^{2+} , Zn^{2+} in acidic solution then ion will precipitate:

- (1) Cu^{2+} , Ni^{2+}
- (2) Ni^{2+}
- (3) Cu^{2+} , Zn^{2+}
- (4) Cu^{2+}

60. In Nessler's reagent for the detection of ammonia the active species is:

- (1) Hg_2Cl_2
- (2) HgCl_2
- (3) Hg_2I_2
- (4) HgI_4^{2-}

61. In the analysis of basic radicals, the group reagent H_2S gas is generally used in:

- (1) I and II groups
- (2) II and III groups
- (3) III and V groups
- (4) II and IV groups

62. Which of the following is not a preliminary test used to detect ions?

- (1) Borax bead test
- (2) Flame test

- (3) Brown ring test
- (4) Charcoal cavity test

63. A salt which gives CO_2 with dilute H_2SO_4 and also decolourizes acidified KMnO_4 on warming is:

- (1) HCO_3^-
- (2) CO_3^{2-}
- (3) Oxalate ion
- (4) Acetate ion

64. A substance on treatment with dil. H_2SO_4 liberates a colourless gas which produces:

(i) Turbidity with baryta water and (ii) turns acidified dichromate solution green. The reaction indicates the presence of:

- (1) $\text{C}_2\text{O}_4^{2-}$
- (2) S^{2-}
- (3) SO_3^{2-}
- (4) NO_2^-

65. A salt X when treated with dilute acid gives a colourless gas which on coming in contact with air forms reddish brown gas. Identify the salt X:

- (1) Na_2CO_3
- (2) NaNO_2
- (3) CH_3COONa
- (4) NaCl

66. Experiment of detection of S^{2-} is given below in alkaline medium:



Select the correct statement about the experiment:

- (1) Colour of complex formed is purple or violet
- (2) Oxidation number of Fe in product is +3
- (3) IUPAC name of product is pentacyanonitroferrate(I) ion
- (4) Colour of complex formed is yellow

67. Which compound will not give positive chromyl chloride test?

- (1) CuCl_2
- (2) HgCl_2
- (3) ZnCl_2
- (4) $\text{C}_6\text{H}_5\text{NH}_3^+\text{Cl}^-$

68. When $\text{K}_2\text{Cr}_2\text{O}_7$ crystals are heated with concentrated HCl , the gas evolved is:

- (1) O₂
- (2) Cl₂
- (3) CrO₂Cl₂
- (4) HCl

69. When concentrated H₂SO₄ is added to dry KNO₃, brown fumes evolve. These brown fumes are of:

- (1) SO₂
- (2) SO₃
- (3) NO
- (4) NO₂

70. If on heating the salt with conc. H₂SO₄, violet vapours with pungent smell is evolved which turns starch paper blue. The test shows the presence of:

- (1) Iodide ion
- (2) Bromide ion
- (3) Chloride ion
- (4) Iodide and bromide ion

71. A mixture is known to contain NO₃⁻ and NO₂⁻. Before performing ring test for NO₃⁻ the aq. solution should be made free of NO₂⁻. This is done by heating with:

- (1) NH₄Cl
- (2) Zn dust
- (3) Conc. HNO₃
- (4) Dil. HNO₃

72. The gas produced in the reaction given below at 25°C is:



- (1) SO₂ only
- (2) CO₂ only
- (3) CO₂ and CO both
- (4) Na₂SO₄

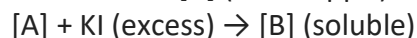
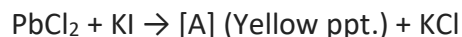
73. Which of following acidic radicals are detected by conc. H₂SO₄?

- (1) Sulphate and phosphate
- (2) Sulphide and sulphite ion
- (3) Carbonate and acetate ion
- (4) Nitrate and iodide ion

74. Salt + AgNO₃ → Yellow ppt (A). A is almost insoluble in concentrated ammonia solution. Identify the anion in the salt:

- (1) Cl⁻
- (2) S²⁻
- (3) I⁻
- (4) CH₃COO⁻

75. Reactions:



Compound [A] and [B] respectively, are:

- (1) PbI₄ and K₂[PbI₄]
- (2) K₂[PbI₄] and PbI₄
- (3) PbI₂ and K₂[PbI₄]
- (4) PbI₂ and K₂[PbI₂]

76. Which of the following white ppts are insoluble in NH₃?

- (1) AgCl
- (2) Hg₂Cl₂
- (3) PbCl₂
- (4) All of these

77. Ag⁺ + CN⁻ → A(ppt) + Excess CN⁻ → B. Select the correct statement:

- (1) Colour of compound A is yellow
- (2) Compound B is a black precipitate
- (3) Colour of compound A is red
- (4) B is [Ag(CN)₂]⁻

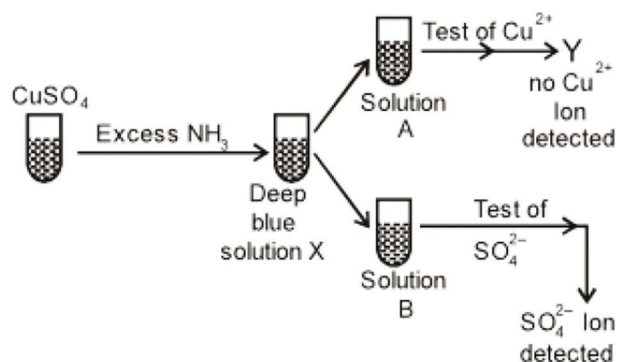
78. Choose the correct pair regarding solubility:

- (1) CuS < MnS
- (2) CoS > ZnS
- (3) CdS > NiS
- (4) CuS > ZnS

79. Which of the following statement is incorrect?

- (1) Colour of lead sulphide (PbS) ppt is yellow
- (2) Colour of lead iodide ppt is yellow
- (3) Colour of nickel sulphide (NiS) ppt is black
- (4) Colour of lead sulphate (PbSO₄) is white

80. Which of the following is correct regarding the experiment shown?



- (1) Deep blue solution X contains Cu^{1+}
- (2) Experiment was wrongly conducted
- (3) Deep blue solution X contains complex salt of Cu^{2+}
- (4) CuSO_4 does not react with NH_3

81. Which of the following is correct statement?

- (1) Cu^+ undergoes disproportionation in water
- (2) $\text{Cu}^{2+}(\text{aq})$ is more stable than $\text{Cu}^+(\text{aq})$
- (3) Hydration energy of Cu^{2+} is more negative than Cu^+
- (4) All of these

82. An aqueous solution of $\text{FeSO}_4 \cdot \text{Al}_2(\text{SO}_4)_3$ and chrome alum is heated with excess of Na_2O_2 and filtered. The materials obtained are:

- (1) Colourless filtrate and green residue
- (2) Yellow filtrate and green residue
- (3) Yellow filtrate and brown residue
- (4) Green filtrate and brown residue

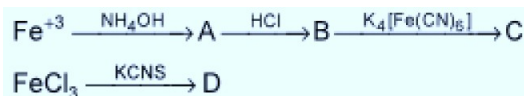
83. Which of the following statement is correct?

- (1) Fe^{2+} gives brown colour with NH_4SCN
- (2) Fe^{2+} gives blue ppt with potassium ferricyanide
- (3) Fe^{3+} gives brown colour with potassium ferrocyanide
- (4) Fe^{3+} gives red colour with potassium ferrocyanide

84. The oxidation state of Fe in its brown ring complex is:

- (1) +1
- (2) +2
- (3) +3
- (4) +4

85. Observe the following reactions:



Which of the following is incorrect?

- (1) A are reddish brown precipitates
- (2) C formed has blue colour
- (3) Compound D is blood red in colour
- (4) B is insoluble in water

86. The colour of the solution in product of the reaction $\text{CH}_3\text{COONa} + \text{FeCl}_3 + \text{H}_2\text{O} \rightarrow$ is:

- (1) Brown Red
- (2) Yellow
- (3) Black
- (4) Green

87. When H_2S is passed through an ammoniacal salt solution (x), a white precipitate is obtained.

The (x) can be a:

- (1) Cobalt salt
- (2) Nickel salt
- (3) Manganese salt
- (4) Zinc salt

88. Strontium sulphate is mixed with conc. HCl and flame test is performed. The colour of flame is:

- (1) Yellow
- (2) Violet
- (3) Green
- (4) Crimson Red

89. Which of the following is insoluble in aqua regia?

- (1) HgS
- (2) NiS
- (3) CoS
- (4) Ag_2S

90. The reagent NH_4Cl and aqueous NH_3 precipitates:

- (1) Ca^{2+}
- (2) Al^{3+}
- (3) Mg^{2+}
- (4) Zn^{2+}

91. Mark the incorrect statement out of the following:

- (1) Group I basic radicals ppt as chlorides

- (2) Group IV basic radicals ppt as sulphides
- (3) Group V basic radicals ppt as carbonates
- (4) Group II basic radicals ppt as hydroxide

92. The white precipitate dissolves in ammonium acetate solution on boiling. A black precipitate appears on passing H_2S gas in its aqueous solution. The black precipitate dissolves in hot HNO_3 . This white precipitate is of:

- (1) BaSO_4
- (2) SrSO_4
- (3) PbSO_4
- (4) CdSO_4

93. A salt on treatment with dilute HCl gives a pungent smelling gas and a yellow precipitate. The salt gives green flame when tested. The solution gives a yellow precipitate with potassium chromate. The salt is:

- (1) NiSO_4
- (2) BaS_2O_3
- (3) PbS_2O_3
- (4) CuSO_4

94. In the fifth group $(\text{NH}_4)_2\text{CO}_3$ is added to precipitate out the carbonates, we do not add Na_2CO_3 because:

- (1) MgCO_3 is soluble in Na_2CO_3
- (2) Na_2CO_3 increases solubility of Group V
- (3) MgCO_3 will also be precipitated out in Group V
- (4) Na_2CO_3 decreases K_{sp} of MgCO_3

95. Heat evolved during neutralization of 1 mol NaOH with 1 mol HCl will be nearly:

- (1) 13.7 kcal
- (2) 27.4 kcal
- (3) 6.8 kcal
- (4) 27.1 kcal

96. Which among the following acid will result in maximum evolution of heat on neutralization with KOH ?

- (1) HCl
- (2) HBr
- (3) HI
- (4) HF

97. If heat of neutralization of oxalic acid with KOH is $-X \text{ kcal mol}^{-1}$ then heat of dissociation of oxalic acid in kcal mol^{-1} will be:

- (1) $13.7 - X$
- (2) $27.4 - X$
- (3) $13.7 - 2X$
- (4) $27.4 - 2X$

98. Specific heat capacity of pure water is nearly:

- (1) $4.18 \text{ J g}^{-1}\text{K}^{-1}$
- (2) $2.08 \text{ J g}^{-1}\text{K}^{-1}$
- (3) $1 \text{ J g}^{-1}\text{K}^{-1}$
- (4) $8.36 \text{ J g}^{-1}\text{K}^{-1}$

99. Given below are two statements:

Assertion (A): Aqueous solution of CuSO_4 will have pH less than 7 at 25°C .

Reason (R): Dissolution of CuSO_4 in water results into acidic solution.

- (1) Both (A) and (R) are true and (R) is correct explanation
- (2) (A) is true but (R) is false
- (3) Both (A) and (R) are false
- (4) Both (A) and (R) are true but (R) is not correct explanation

100. The enthalpies of solution for copper sulphate pentahydrate and anhydrous copper sulphate are $-11.7 \text{ kJ mol}^{-1}$ and $-65.5 \text{ kJ mol}^{-1}$ respectively. The hydration enthalpy of anhydrous copper sulphate is:

- (1) $-53.8 \text{ kJ mol}^{-1}$
- (2) $+53.8 \text{ kJ mol}^{-1}$
- (3) $-77.2 \text{ kJ mol}^{-1}$
- (4) $+77.2 \text{ kJ mol}^{-1}$

101. Iodine solution is prepared by dissolving iodine in:

- (1) NaOH
- (2) Na_2CO_3
- (3) HCl
- (4) KI

102. In the reaction, $\text{I}_2 + 2\text{S}_2\text{O}_3^{2-} \rightarrow 2\text{I}^- + \text{S}_4\text{O}_6^{2-}$, equivalent weight of iodine will be equal to:

- (1) $4/6$ of molecular weight
- (2) Molecular weight / 2

- (3) $\frac{2}{9}$ of molecular weight
- (4) Twice the molecular weight

103. Given below are two statements:

Assertion (A): Starch is used as an indicator in iodometric and iodimetric titrations.

Reason (R): Starch forms iodostarch complex with iodine, which is blue coloured.

- (1) Both (A) and (R) are correct, and (R) is correct explanation
- (2) Both (A) and (R) are correct, but (R) is not correct explanation
- (3) (A) is correct, but (R) is incorrect
- (4) (A) is incorrect, but (R) is correct

104. Which mixture of the solutions will lead to the formation of negatively charged colloidal $[\text{AgI}]$ sol?

- (1) 50 mL of 1 M AgNO_3 + 50 mL of 1 M KI
- (2) 50 mL of 1 M AgNO_3 + 50 mL of 2 M KI
- (3) 50 mL of 2 M AgNO_3 + 50 mL of 1.5 M KI
- (4) 50 mL of 0.1 M AgNO_3 + 50 mL of 0.1 M KI

105. When SO_2 gas is bubbled into H_2S gas:

- (1) Lyophilic sol of sulphur is formed
- (2) Lyophobic sol of sulphur is formed
- (3) Suspension of water and sulphur is formed
- (4) A true solution of sulphur in water is formed

106. The stabilization of the dispersed phase in a lyophobic sol is due to:

- (1) The viscosity of the medium
- (2) The surface tension of the medium
- (3) Affinity for the medium
- (4) The formation of an electrical double layer

107. When FeCl_3 solution is added to NaOH a negatively charged sol is obtained. It is due to the:

- (1) Presence of basic group
- (2) Preferential adsorption of OH^- ions
- (3) Self dissociation
- (4) Electron capture by sol particles

108. Which of the following metallic sols cannot be prepared by Bredig's arc method?

- (1) Gold
- (2) Silver
- (3) Platinum
- (4) Sodium

109. A positive colloid will be formed when:

- (1) NH_4OH added dropwise to dil. FeCl_3
- (2) H_2S passed into dil. AsCl_3 solution
- (3) Dilute AgNO_3 added to saturated AgI
- (4) Gelatin is dissolved in water

110. When dilute aqueous solution of AgNO_3 (excess) is added to KI solution, positively charged sol particles of AgI are formed due to adsorption of ion:

- (1) K^+
- (2) Ag^+
- (3) I^-
- (4) NO_3^-

111. In the preparation of AgI sol, AgNO_3 is added to excess of potassium iodide solution. The particles of the sol will acquire:

- (1) Negative charge
- (2) Positive charge
- (3) No charge
- (4) Unpredictable

112. Which of the following is positively charged colloidal particle?

- (1) As_2S_3
- (2) $\text{Al}_2\text{O}_3 \cdot x\text{H}_2\text{O}$
- (3) Au
- (4) Pt

113. Lyophobic colloids are:

- (1) Reversible colloids
- (2) Irreversible colloids
- (3) Protective colloids
- (4) Gum, proteins

ANSWER KEY

Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans	Q	Ans
1	(1)	2	(2)	3	(3)	4	(1)	5	(2)	6	(4)	7	(4)
8	(3)	9	(2)	10	(4)	11	(3)	12	(2)	13	(3)	14	(1)
15	(1)	16	(3)	17	(3)	18	(1)	19	(4)	20	(4)	21	(3)
22	(1)	23	(4)	24	(4)	25	(1)	26	(2)	27	(4)	28	(3)
29	(3)	30	(3)	31	(4)	32	(3)	33	(3)	34	(2)	35	(3)
36	(4)	37	(1)	38	(2)	39	(1)	40	(2)	41	(2)	42	(3)
43	(3)	44	(2)	45	(3)	46	(1)	47	(2)	48	(2)	49	(1)
50	(4)	51	(2)	52	(1)	53	(1)	54	(3)	55	(2)	56	(3)
57	(1)	58	(1)	59	(4)	60	(4)	61	(4)	62	(3)	63	(3)
64	(3)	65	(2)	66	(1)	67	(2)	68	(2)	69	(4)	70	(1)

71	(1)	72	(3)	73	(4)	74	(3)	75	(3)	76	(3)	77	(4)
78	(1)	79	(1)	80	(3)	81	(4)	82	(3)	83	(2)	84	(1)
85	(4)	86	(1)	87	(4)	88	(4)	89	(4)	90	(2)	91	(4)
92	(3)	93	(2)	94	(3)	95	(1)	96	(4)	97	(2)	98	(1)
99	(1)	100	(1)	101	(4)	102	(2)	103	(1)	104	(2)	105	(2)
106	(4)	107	(2)	108	(4)	109	(3)	110	(2)	111	(1)	112	(2)
113	(2)												



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