CHEMISTRY **Max.Marks:80**

SECTION-1

(SINGLE CORRECT CHOICE TYPE)

Section-I (Single Correct Answer Type, Total Marks: 24) contains 8 multiple choice questions. Each question has four choices (A), (B), (C) and (D) out of which **ONLY ONE is correct.** For each question you will be awarded 3 marks if you darken ONLY the bubble corresponding to the correct answer and zero marks if no bubble is darkened. In all other cases, minus one (-1) mark will be awarded.

1. Rubbing the salt (moisture with water) with oxalic acid is used to identify which one of the following anions in the salt

A) NO_3^- B) Cl^- C) CO_3^{2-} D) CH_3COO^-

2. P – Amino – N, N – dimethylaniline is added to a strongly acidic solution of sulphide salt. The resulting solution is treated with a few drops of $FeCl_3$, then colour observed is

A) Blue B) Green C) Red D) Pink

3. A carbonate precipitate is soluble in CH_3COOH .Now this solution do not give precipitate with both K_2CrO_4 and $(NH_4)_2SO_4$ solutions but give precipitate with $Na_2C_2O_4$ .cation of the carbonate precipitate is

A) Ca^{2+} B) Sr^{2+} C) Ba^{2+} D) K^+

4. In the brown ring test for nitrate ion with sodium carbonate extract, initially extract to be neutralized with which one of the following acids

A) dil HNO_3 B) dil.HCl C) dil.H_2SO_4 D) dil.H_3PO_4

5. Correct statement about the Bunsen frame is

A) Yellow flame is oxidizing flame

B) Blue flame is reducing flame

C) Oxidizing flame has low temperature

D) Reducing flame has some reducing properties due to unburned hydrocarbon fuel

6. $Hg_2^{2+} \rightleftharpoons Hg + Hg^{2+}; K_c = 1.14X10^{-2}$

Which one of the following ions do not promote the disproportionation of mercurous ion

A) Cl^- B) OH^- C) CN^- D) NH_3

7. Which of the following salts do not give any colour in flame test

A) Mg B) Ca C) Ba D) Zn

8. In the systematic inorganic salt analysis, Pb^{2+} is present in both first and second group cations because

A) Both $PbCl_2$ and PbS are water insoluble precipitates

B) Pb^{2+} can be precipitated as PbS at low concentration of S^{2-} also

C) Pb^{2+} belong to first group only not second group

D) $PbCl_2$ is sparingly soluble in water and hence it is also present in the filtrate of first group which is used for second group cations analysis

SECTION-2
(MORE THAN ONE TYPE)

Section - II (Multiple Correct Answers Type, Total Marks: 16) contains 4 multiple choice questions. Each question has four choices (A), (B), (C) and (D) out of which ONE or MORE may be correct. For each question you will be awarded 4 marks if you darken ALL the bubble(s) corresponding to the correct answer(s) ONLY and zero marks otherwise. There are no negative marks in this section.

9. Passing H_2S gas through hot solution of $PbCl_2$ saturated with KCl gives a red precipitate 'X' and which turns black precipitate 'Y' on passing excess H_2S. 'X' and 'Y' are

A) X is $Pb_2S\ Cl_2$ B) Y is PbS C) Y is PbS_2O_3 D) X is $PbSCl_4$

10. X (salt) $\xrightarrow[\text{gently heated}]{NaOH\ excess}$ pungent smelling gas(Y) $+$ *salt solution* $\xrightarrow[\Delta]{Devardas\ alloy}$ Y(gas).X may be

A) NH_4NO_2 B) NH_4NO_3 C) $NaNO_2$ D) $NaNO_3$

11. Cu^{2+} can oxidize which of the following anions (consider slow oxidation also)

A) I^- B) CN^- C) SCN^- D) $S_2O_3^{2-}$

12. Correct statement about $K_3[Fe(CN)_6]$ is

A) It oxidizes I^- to I_2

B) It gives green precipitate with Cu^{2+}

C) It gives white precipitate with Zn^{2+} ion

D) It is reduced to ferrocyanide by H_2O_2 in basic medium

SECTION-3
[INTEGER TYPE]

Section-III (Integer Answer Type, Total Marks: 24) contains 6 questions. The answer to each of the questions is a single-digit integer, ranging from 0 to 9. The bubble corresponding to the correct answer is to be darkened in the ORS. For each question you will be awarded 4 marks if you darken ONLY the bubble corresponding to the correct answer and zero marks otherwise. There are no negative marks in this section.

13. Among the following cations how many gives hydroxide precipitate with NaOH and it is soluble in excess of NaOH

$Pb^{2+}, Sn^{2+}, Sn^{4+}, Al^{3+}, Zn^{2+}, Cr^{3+}, Ni^{2+}, Sr^{2+}, Fe^{3+}$

14. Among the following how many are soluble in yellow ammonium sulphide

$HgS, PbS, CuS, CdS, Bi_2S_3, Sb_2S_3, SnS, SnS_2, As_2S_3$

15. How many of the following can precipitate Pb^{2+} from solution

$H_2SO_4, Na_2CO_3, K_2CrO_4, dil.HCl, KI, HNO_3, CH_3COOH$

16. In trans $[Ni(dmg)_2]$ number of chelating rings are

17. Among the following how many are coloured $Sc^{3+}_{(aq)}, Mn^{2+}_{(aq)}$,

anhydrous $CuSO_4, CuSO_4.5H_2O, CoCl_2.4H_2O, CoCl_2.6H_2O, FeCl_3, K_4[Fe(CN)_6], Cu_2O$

18. In Schweitzer's reagent, number of NH_3 ligands present per each complex ion is/are

SECTION-4

[Matrix Matching Type]

Section-IV (Matrix-Match Type, Total Marks: 16) contains 2 questions. Each question has four statements (A, B, C and D) given in Column I and five statements (p, q, r, s and t) in Column II. Any given statement in Column I can have correct matching with ONE or MORE statement(s) given in Column II. For example, if for a given question, statement B matches with the statements given in q and r, then for the particular question, against statement B, darken the bubbles corresponding to q and r in the ORS. For each question you will be awarded 2 marks for each row in which you have darkened ALL the bubble(s) corresponding to the correct answer(s) ONLY and zero marks otherwise. Thus, each question in this section carries a maximum of 8 marks. There are no negative marks in this section.

19.

List – I (cation)	List – II (test)
A) Pb^{2+}	P) gives ppt with KI and it is soluble in excess of concentrated KI
B) Ag^{+}	Q) gives ppt with KCN and it soluble in excess of KCN
C) Hg^{2+}	R) gives ppt with NH_4OH and it is soluble in excess of NH_4OH
D) Cu^{2+}	S) gives ppt with NaOH and it is soluble in excess of NaOH
	T) gives sulphide ppt with H_2S gas

20.

List – I (anion)	List – II (test)
A) CO_3^{2-}	P) a gas liberated with dil.HCl or Conc.H_2SO_4
B) SO_3^{2-}	Q) decolourise acidified $KMnO_4$
C) S^{2-}	R) gives ppt with $BaCl_2$ solution and it is soluble in dil.HCl
D) Cl^{-}	S) gives ppt with $CaCl_2$ solution and it is soluble in dil.HCl
	T) gives ppt with $AgNO_3$