REVISION CLASS TEST (SALT ANALYSIS)

INORGANIC CHEMISTRY TIME :30 Min

SECTION–I(i) : (Maximum Marks : 24)

- This section contains **EIGHT** questions.
- Each question has **FOUR** options (A), (B), (C) and (D). **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :

Full Marks : +3 If only the bubble corresponding to the correct option is darkened.
Zero Marks : 0 If none of the bubbles is darkened.
Negative Marks : –1 In all other cases

1. Metals which are not dissolved in conc. HNO_3 due to formation of passive film of oxide.
(A) Hg, Cu (B) Ag, Zn (C) Au, Pt (D) Al, Cr

2. Which of the following metal cation gives green colour in the borax bead test in oxidizing flame in cold condition.
(A) Cu (B) Co (C) Cr (D) Ni

3. Which of the following salt produce coloured gas with dil.H_2SO_4 ?
(A) NaBr (B) $NaNO_2$ (C) $NaNO_3$ (D) NaI

4. Oxidation number of silver is **NOT** changed when –
(A) $Ag_2SO_{3\,(Aq)}$ is boiled
(B) Ag_2CO_3 crystal is strongly heated
(C) $AgNO_3$ reacts with aqueous $[Co(NH_3)_6]Cl_3$ solution
(D) $AgNO_{3\,(Aq.)}$ solution reacts with Cu-metal

5. Which of the following cation produce white coloured ppt. with dil. HCl :-
(A) Hg_2^{2+} (B) Pb^{2+} (C) Ag^+ (D) All of these

6. If in sodium salt 'A' anion have oxidation state of central atom is +3. Salt 'A' react with conc. H_2SO_4 and produce two gaseous product excluding SO_2. Select the **CORRECT** alternative about salt 'A' :-

(A) $Salt_{(aq.)}$ 'A' + $KMnO_4/H^+ \xrightarrow[\Delta]{60^\circ}$ brown ppt.

(B) $Salt_{(aq.)}$ 'A' + $\underset{\text{neutral sol.}}{FeCl_3} \rightarrow$ deep red colour sol.

(C) $Salt_{(aq.)}$ 'A' + dil.$H_2SO_4 \rightarrow$ no observable change
(D) Salt 'A' contains CH_3COO^- anion

7. Select the **INCORRECT** match :-

Test of cations	Group Reagent
(A) Cu^{+2}, Cd^{+2}, Hg^{+2}	H_2S with dil. HCl
(B) Fe^{+3}, Cr^{+3}, $A\ell^{+3}$	$NH_4OH + NH_4Cl$
(C) Ba^{+2}, Sr^{+2}, Ca^{+2}	$(NH_4)_2CO_3 + NH_4Cl$
(D) Mn^{+2}, Zn^{+2}, Co^{+2}	H_2S in acidic medium

8. (X) + Zn powder $\xrightarrow[\Delta]{OH^\ominus}$ $'Y'_{(g)}$ $\xrightarrow{\text{dil. HCl}}$ white fumes
salt
↓ sulphamic acid
$Z_{(g)}$

Identify 'Y' & 'Z' respectively
(A) SO_2 , H_2S (B) N_2O, NH_3 (C) NH_3, N_2 (D) N_2, N_2O

SECTION-I(ii) : (Maximum Marks: 12)

- This section contains **THREE** questions.
- Each question has **FOUR** options for correct answer(s). **ONE OR MORE THAN ONE** of these four option(s) is (are) correct option(s).
- For each question, choose the correct option(s) to answer the question.
- Answer to each question will be evaluated according to the following marking scheme:

Full Marks : +4 If only (all) the correct option(s) is (are) chosen.
Partial Marks : +3 If all the four options are correct but ONLY three options are chosen.
Partial Marks : +2 If three or more options are correct but ONLY two options are chosen, both of which are correct options.
Partial Marks : +1 If two or more options are correct but ONLY one option is chosen and it is a correct option.
Zero Marks : 0 If none of the options is chosen (i.e. the question is unanswered).
Negative Marks : –2 In all other cases.

9. Which of the following compound is/are produced during heating borax ($Na_2B_4O_7 \cdot 10H_2O$)
(A) $Na_2B_4O_7$(Anhydrous) (B) $NaBO_3$
(C) $NaBO_2$ (D) B_2O_3

10. $Na_2S_2O_3$(solution) $\xrightarrow{'X'/H^+}$ coloured solution
Where 'X' is/are -
(A) $CuSO_4$(aq.) (B) $FeCl_3$(aq.) (C) Cl_2 water (D) $Cr_2O_7^{-2}$

11. Aqueous solution containing Al^{+3} , Mg^{+2}, Fe^{+3}, Ni^{+2} is treated with NH_4Cl & NH_4OH. Which ion(s) is/are precipitated
(A) Al^{+3} (B) Mg^{+2} (C) Fe^{+3} (D) Ni^{+2}

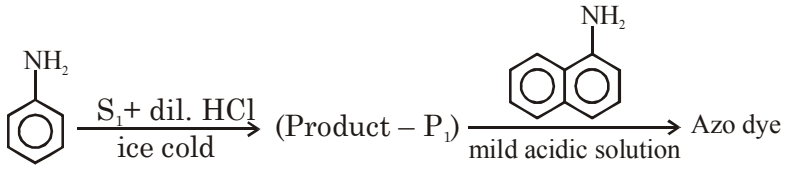
SECTION–I(iii) : (Maximum Marks : 12)

- This section contains **ONE** paragraph.
- Based on each paragraph, there are **TWO** questions.
- Each question has **FOUR** options (A), (B), (C) and (D) **ONLY ONE** of these four options is correct.
- For each question, darken the bubble corresponding to the correct option in the ORS.
- For each question, marks will be awarded in one of the following categories :

Full Marks : +3 If only the bubble corresponding to the correct answer is darkened.
Zero Marks : 0 In all other cases.

Paragraph for Q.12 to Q.13

Consider two potassium salt (S_1) and (S_2) which gives following observation



$CuSO_{4(aq.)} \xrightarrow{Salt - S_2}$ (Product – P_2)↓ + K_2SO_4 + poisonous gas (G)

(Product – P_1) + (Product –P_2) ⟶ Show Sandmeyer's reaction

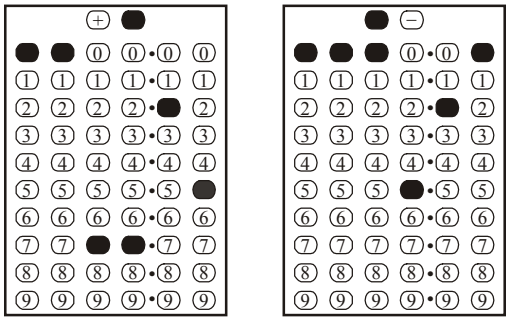
12. Salt–S_2 is
(A) KCN (B) KBr (C) KNO_2 (D) NaCN

13. Select **CORRECT** for anion in salt S_1
(A) can react with $KMnO_4/H^+$ (B) react with KI/H^+
(C) gives NH_3 with KOH + Al (D) All are correct

SECTION-II : (Maximum Marks: 12)

- This section contains **FOUR** questions.
- The answer to each question is a **NUMERICAL VALUE**.
- For each question, enter the correct numerical value (in decimal notation, truncated/rounded-off to the **second decimal place**; e.g. 6.25, 7.00, –0.33, –.30, 30.27, –127.30, if answer is 11.36777..... then both 11.36 and 11.37 will be correct) by darken the corresponding bubbles in the ORS.

  For Example : If answer is –77.25, 5.2 then fill the bubbles as follows.



- Answer to each question will be evaluated according to the following marking scheme:

  Full Marks : +3 If ONLY the correct numerical value is entered as answer.

  Zero Marks : 0 In all other cases.

1. Find the total number of oxidising agents which can oxidise SO_2 to SO_4^{-2} in acidic medium.
Fe^{+2} , $Cr_2O_7^{-2}$, MnO_4^- , Br_2 water , H_2S , KIO_3 , Cl_2 water , H_2O_2

2. How many of the following salt on heating in bunsen flame gives characteristic green flame:-
$BaCl_2$, $CaCl_2$, LiCl , NaCl , $MgCl_2$

3. $Na_2CrO_{4(Aq.)} \xrightarrow{\text{conc. } H_2SO_4}$ product

What is the difference between oxidation number of Cr in product and reactant :-

4. Find the number of yellow colour sulphide(s) in the following :-
CdS, Sb_2S_3, As_2S_3, As_2S_5, SnS_2, ZnS, PbS

SECTION–IV : (Maximum Marks : 16)

- This section contains **TWO** questions.
- Each question contains two columns, **Column-I** and **Column-II.**
- **Column-I** has **four** entries (A), (B), (C) and (D)
- **Column-II** has **five** entries (P), (Q), (R), (S) and (T)
- Match the entries in **Column-I** with the entries in **column-II.**
- One or more entries in **Column-I** may match with one or more entries in **Column-II.**
- The ORS contains a 4 × 5 matrix whose layout will be similar to the one shown below :

(A) (P) (Q) (R) (S) (T)

(B) (P) (Q) (R) (S) (T)

(C) (P) (Q) (R) (S) (T)

(D) (P) (Q) (R) (S) (T)

- For each entry in **column-I,** darken the bubbles of all the matching entries. For example, if entry (A) in **Column-I** matches with entries (Q), (R) and (T), then darken these three bubbles in the ORS. Similarly, for entries (B), (C) and (D).
- For each question, marks will be awarded in one of the following categories :

  For each entry in **Column-I**

  Full Marks : +2 If only the bubble(s) corresponding to all the correct match(es) is (are) darkened

  Zero Marks : 0 In all other cases

1.

Column I	**Column II**
(A) $S_2O_3^{2-}$	(P) give fumes/gas with dil H_2SO_4
(B) $NO_3^{\ominus}$	(Q) give violet coloured ppt. with $[Ni(en)_3](NO_3)_2$
(C) $NO_2^{\ominus}$	(R) give white ppt with $BaCl_2$ solution
(D) S^{2-}	(S) identified by brown ring test
	(T) identified by methylene blue dye test

2. Match the folloiwng column :-

Column - I (Test of cation/anion)	**Column - II (Observation)**
(A) NO_2^- + dil. H_2SO_4 + $FeSO_4$(Aq.)	(P) Purple colour solution
(B) S^{-2} + $Na_2[Fe(CN)_5NO]$	(Q) Brown ring formation
(C) Flame test of Ba^{2+}	(R) Colourless solution
(D) Pb^{+2} + NaOH (excess)	(S) Apple green colour flame
	(T) Complex compound is formed in product side