

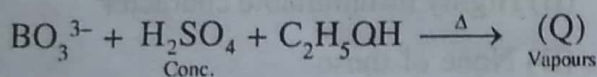
ANIONS : Class A (Subgroup - I)

- The colour developed, when sodium sulphide is added to sodium nitroprusside is:
 (A) Purple (B) yellow (C) red (D) black
- When a neutral or slightly alkaline solution of thiosulphate is treated with the $[\text{Ni}(\text{en})_3](\text{NO}_3)_2$ complex, then
 (A) Green precipitate is obtained (B) Brown precipitate is obtained
 (C) Violet precipitate is obtained (D) Yellow precipitate is obtained
- When CH_3COONa heated with solid As_2O_3 then compound X is formed. The smell of compound X is -
 (A) Pungent smell (B) Rotten Fish smell (C) Nauseating smell (D) Rotten egg smell
- NO_2^- ion can be destroyed by - $\text{NH}_2\text{C}(\text{NH}_2)_2$
 (A) Sulphamic acid (B) Thiourea (C) Urea (D) All of these
- Solutions of sodium azide (NaN_3) and iodine (as KI_3) do not react but on addition of a trace of 'X' ion, which acts as a catalyst there is an immediate vigorous evolution of nitrogen. Then 'X' may be:
 (A) $\text{S}_2\text{O}_3^{2-}$ (B) S^{2-} (C) $\overset{\ominus}{\text{S}}\text{CN}$ (D) All are correct.
- When AgNO_3 react with 'X' ion then initially no visible change occurs due to formation of water soluble complex. Then ion 'X' may be:
 (A) SO_3^{2-} (B) $\text{S}_2\text{O}_3^{2-}$ (C) S^{2-} (D) CO_3^{2-}
- Match the column

Column-I (A) S^{2-} (B) HSO_3^- (C) SO_3^{2-} (D) $\text{S}_2\text{O}_3^{2-}$	Column-II (P) Produces white ppt. with excess AgNO_3 (Q) Evolves gas with dil. HCl which turns lime water milky (R) Evolves gas with dil. H_2SO_4 which does not turn Baryta water milky (S) Produces ppt. with $\text{Pb}(\text{OAc})_2$ solution. (T) Produces white ppt with BaCl_2 solution.
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- Find the number of acidic radical(s) which can form coloured gas when treated with **dil.** H_2SO_4 .
 CO_3^{2-} , NO_2^- , Br^- , I^- , SO_3^{2-}
 CO_2 (coloured), NO_2 (coloured), SO_2 (coloured)

Class A (Subgroup - II)

- Chromyl chloride test is given by -
 (A) CH_3Cl (B) AgCl (C) Hg_2Cl_2 (D) NH_4Cl
- $\text{BO}_3^{3-} + \text{H}_2\text{SO}_4 \xrightarrow{\Delta} \text{(P)}$
Conc. White fumes
Covalent



P & Q are respectively -

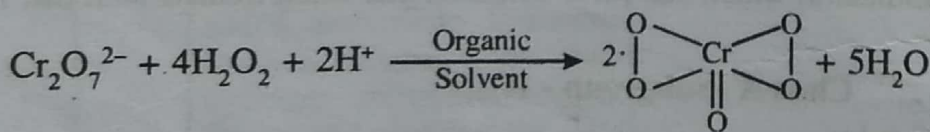
- (A) H_3BO_3 , H_3BO_3 (B) $(\text{C}_2\text{H}_5)_3\text{BO}_3$, H_3BO_3
 (C) $(\text{C}_2\text{H}_5)_3\text{BO}_3$, $(\text{C}_2\text{H}_5)_3\text{BO}_3$ (D) H_3BO_3 , $(\text{C}_2\text{H}_5)_3\text{BO}_3$

SBG STUDY

- In layer test of I^- and Br^- . If reddish -brown layer comes first then -
 (A) Br^- present (B) I^- absent (C) Both (A) and (B) (D) None of these

12. **Statement-1** : When H_2S gas is passed through Na-nitroprusside solution it gives purple colouration
Statement-2 : H_2S is an weak acid
- (A) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.
 (B) Statement-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.
 (C) Statement-1 is true, statement-2 is false.
 (D) Statement-1 is false, statement-2 is true.
13. When the soda extract containing thiosulphate ion treated with excess of $AgNO_3$ solution followed by boiling, then.
- (A) White precipitate is formed (B) Black precipitate is formed
 (C) brown precipitate is formed (D) No ppt precipitate is formed
14. "Cacodyl oxide" is formed in the specific test of -
- (A) Formate (B) Oxalate (C) Acetate (D) Nitrate
15. An aqueous solution of gas (X) gives the white turbidity on passing H_2S in the solution. Identify (X)
- (A) NH_3 (B) SO_2 (C) CO_2 (D) None of these
16. NO_2^- and NO_3^- can be distinguished by which of the following reagent.
- (A) dil. H_2SO_4 (B) conc. H_2SO_4
 (C) Devarda's alloy + conc. NaOH (D) None of these
17. $[Fe(H_2O)_5NO]^{2+}$ is unstable because -
- (A) It liberates NO gas on warming
 (B) It liberates NO gas on shaking
 (C) The charge of central atom is +1 (relatively low enough)
 (D) None of these

Class B



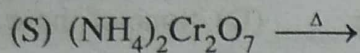
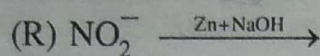
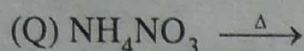
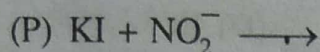
In above reaction amyl alcohol is recommended.

Dimethyl ether is not recommended for general use owing to its -

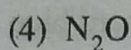
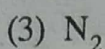
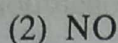
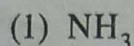
- (A) Highly non-flammable character (B) Highly inflammable character
 (C) Highly poisonous character (D) None of these
19. If barium sulphate is precipitated in a solution containing potassium permanganate it is coloured pink (violet) by -
- (A) Absorption of some of the permanganate (B) Adsorption of some of the permanganate
 (C) Both (A) and (B) (D) None of these

All Anions Of Class A & Class B

20. List-I (Reaction)



List-II (Product)

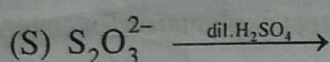
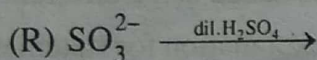
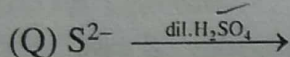
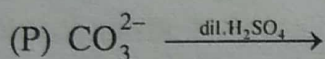


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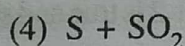
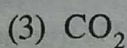
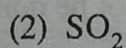
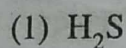
	P	Q	R	S
(A)	3	4	1	2
(C)	4	2	3	1

	P	Q	R	S
(B)	4	2	1	3
(D)	2	4	1	3

21. List-I (Reaction)



List-II (Product)



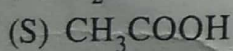
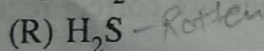
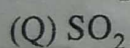
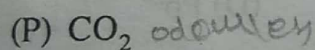
Products

Code :

	P	Q	R	S
(A)	3	4	1	2
(C)	3	1	2	4

	P	Q	R	S
(B)	2	1	4	3
(D)	2	4	1	3

22. List-I (Molecule)



List-II (Characteristic Odour)

(1) Rotten egg smell

(2) Suffocating smell of burning sulphur

(3) Vinegar like smell

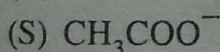
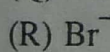
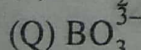
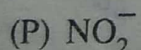
(4) Odour less

Code :

	P	Q	R	S
(A)	4	2	1	3
(C)	3	1	2	4

	P	Q	R	S
(B)	2	4	1	3
(D)	2	4	1	3

23. List-I (Acidic radicals)



List-II (Test)

(1) Green flame test

(2) Cacodyl oxide reaction

(3) Griess Ilosvay test *organic test*

(4) Layer test

Code :

	P	Q	R	S
(A)	4	2	1	3
(C)	3	4	2	1

	P	Q	R	S
(B)	3	1	4	2
(D)	4	3	2	1

CATIONS : DRY TEST

24. Find the number of water of crystallization in microcosmic salt -
 (A) 5 (B) 4 (C) 6 (D) 10
25. What is the colour of K^+ through cobalt/double blue glass -
 (A) Lilac, (B) Violet (C) Brick red (D) Crimson red
26. What is the colour of $CoO \cdot Al_2O_3$ is -
 (A) pink (B) Thenard blue (C) Bluish white (D) None of these
27. The correct formula of Canary yellow ppt and it is the test of ----- acid radical-
 (A) $(NH_4)_2 [PMo_{12}O_{40}]$ and phosphate (B) $(NH_4) H [P(Mo_3O_{10})_4]$ and sulphate
 (C) $(NH_4)_3 [P(Mo_3O_{10})_4]$ and phosphate (D) $Na_3 [P(Mo_3O_{10})_4]$ and phosphate
28. Sodium carbonate bead test generally used forcompounds.
 (A) Mn (B) Cr (C) Zn (D) Cu

WET TEST : GROUP ZERO

29. **Statement-1** : Test of NH_4^+ can not be done within group analysis
Statement-2 : During group analysis several times NH_4^+ - compound is added at the different steps.
 (A) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1
 (B) Statement-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1
 (C) Statement-1 is false, statement-2 is true.
 (D) Statement-1 is true, statement-2 is false.

GROUP - I

30. Which of the following is not group-I cation though the chlorides of all cations are sparingly soluble in water.
 (A) Ag^+ (B) Hg_2^{2+} (C) Cu^+ (D) Pb^{2+}

GROUP - II A

31. $Cu^{2+} + KCN$ (in excess) \rightarrow soluble complex (X). How many statements are correct regarding complex (X) -
 (i) the central atom has the co-ordination number of 6
 (ii) the central atom has the co-ordination number of 4
 (iii) the complex is sq.planar
 (iv) the complex is diamagnetic
 (v) the complex is paramagnetic

32. $BiCl_3 \xrightarrow{KI} \text{black ppt (M)} \xrightarrow{\text{excess KI}} \text{soluble complex (N)}$
 Find the number of moles of I^- ions involved for the formation of per mole of (N).
KBi₄ mangl sol⁺ *BiI₃ dark brown on black.*

GROUP - II B

33. Sn^{2+} and Sn^{4+} can be distinguished by how many of the following methods -
 (i) by passing H_2S in their solution (in acidic medium)
 (ii) by addition of NaOH in their solution
 (iii) by addition of excess NaOH in their solution
 (iv) by addition of dil. HCl in their solution
 (v) by addition of $HgCl_2$ solution in their solution

GROUP - III

34. What is the group-III reagent is generally used for group analysis.
 (A) $\text{NH}_4\text{OH} + \text{NH}_4\text{NO}_3$ (B) $\text{NH}_4\text{Cl} + (\text{NH}_4)_2\text{CO}_3$
 (C) $\text{NH}_4\text{OH} + (\text{NH}_4)_2\text{SO}_4$ (D) $\text{NH}_4\text{OH} + \text{NH}_4\text{Cl}$
35. CrCl_3 solution + Na_2S solution \longrightarrow ppt(A)
 The correct formula and colour of A are
 (A) Cr_2S_3 , Black (B) $\text{Cr}(\text{OH})_3$, Green
 (C) $\text{Na}[\text{Cr}(\text{OH})_4]$, Green (D) None of these

GROUP - IV

36. The auxiliary reagent in group-IV reagent is
 (A) H_2S (B) dil.HCl (C) NaOH (D) NH_4OH

All Group Cations

37. Which of the following cation gives ppt in two groups during group analysis.
 (A) Hg^{2+} (B) Hg_2^{2+} (C) Pb^{2+} (D) Cu^{2+}
38. Which of the following cation produces coloured ppt with Na_2SO_4 solution -
 (A) Pb^{2+} solution (B) Ba^{2+} solution (C) Hg^{2+} solution (D) Ca^{2+} solution
39. NH_4^+ and K^+ ions can be distinguished by the use of following reagent
 (A) $\text{Na}_3[\text{Co}(\text{NO}_2)_6]$ (B) $\text{Na}_2[\text{PtCl}_6]$
 (C) HClO_4 or NaClO_4 (D) Boiling with NaOH
40. Which of the following sulphides is yellow in colour?
 (A) CuS (B) CdS (C) ZnS (D) CoS

MISCELLANEOUS

41. List-I (Compound)

- (P) HgO
 (Q) BaCO_3
 (R) $\text{Na}_4[\text{Fe}(\text{CN})_5\text{NOS}]$
 (S) KI_3

Code : P Q R S

- (A) 3 4 1 2
 (C) 2 4 3 1

List-II (Colour)

- (1) Purple solution
 (2) Yellow ppt
 (3) Dark brown ppt
 (4) White ppt

P Q R S

- (B) 2 4 1 3
 (D) 2 4 3 1

42. List-I (Basic Radical)

- (P) Al^{+3}
 (Q) Zn^{+2}
 (R) Ba^{+2}
 (S) Pb^{+2}

Code : P Q R S

- (A) 4 2 1 3
 (C) 3 1 2 4

List-II (Group)

- (1) II group
 (2) V group
 (3) IV group
 (4) III group

P Q R S

- (B) 2 4 1 3
 (D) 4 3 2 1

43. List-I (Cations)

- (P) Co^{+2}
 (Q) Fe^{+3}
 (R) Cu^{+2}
 (S) Ca^{+2}

Code : P Q R S

- (A) 4 2 1 3
 (C) 1 2 3 4

List-II (Group reagent)

- (1) $(\text{NH}_4)_2\text{CO}_3$ in presence of NH_4Cl
 (2) H_2S gas in acidic medium
 (3) H_2S in presence of NH_4OH
 (4) NH_4OH in presence of NH_4Cl

P Q R S

- (B) 3 1 4 2
 (D) 3 4 2 1