



VIVA QUESTIONS WITH ANSWERS

- (1) What is qualitative analysis?
The detection of acidic and basic radicals present in a given salt is called qualitative analysis.
- (2) What is a radical?
An atom or group of atoms which carries charge and behaves as a single unit in chemical reactions is called a radical.
- (3) What are acidic and basic radicals?
Radicals carrying positive charge are called basic radicals and those carrying negative charge are called acidic radicals.
- (4) What type of bond is present in an inorganic salt?
Ionic bond
- (5) Name the anions detected with the help of dilute H_2SO_4 ?
 CO_3^{2-} , S^{2-} , SO_3^{2-} , NO_2^-
- (6) Why is dilute H_2SO_4 preferred over dilute HCl while testing anions?
When the salt is treated with HCl during the reaction HCl gas is also given out along with the gas evolved by the salt. So the actual gas cannot be identified whereas with H_2SO_4 , no such problem arises.
- (7) Name the anions detected by conc. H_2SO_4 .
 Cl^- , Br^- , I^- , NO_3^- , CH_3COO^- , $\text{C}_2\text{O}_4^{2-}$
- (8) What is lime water and what happens on passing carbon dioxide gas through it?
 $\text{Ca}(\text{OH})_2$ solution. Lime water turns milky due to the formation of insoluble CaCO_3 . But excess of CO_2 changes CaCO_3 into soluble $\text{Ca}(\text{HCO}_3)_2$ and the milkiness disappears.
- (9) What is the composition of dark brown ring which is formed at the junction of two layers in the ring test for nitrates?
 $[\text{Fe}(\text{NO})(\text{H}_2\text{O})_5]\text{SO}_4$
- (10) Write the chemistry of flame test.
In flame test, the valence electron of the atom gets excited and jumps to the higher level. When the electron jumps back to the ground state, frequency of the emitted radiation falls in visible region.
- (11) Why HCl is used in flame test?
In order to convert metal salts into metal chlorides which are more volatile than other salts.
- (12) Why is silver nitrate solution stored in dark coloured bottles?
Silver nitrate solution is photosensitive. Sunlight will decompose it into its oxide.



(13) What is Nessler's reagent?

It is a solution of mercuric iodide in potassium iodide. Its formula is K_2HgI_4 .

(14) Why conc. HCl cannot be used as a group reagent in place of dil. HCl for the precipitation of 1st group cations?

If conc. HCl is used $PbCl_2$ goes into solution due to formation of Chloroplumbus complex.

(15) Why is ammonium not precipitated in any of the groups from I to IV?

Because chloride, sulphide, hydroxide and carbonate of ammonium are soluble in water.

(16) Can we add NH_4OH before adding NH_4Cl in group III?

NH_4Cl is added to decrease the concentration of OH^- ions by suppressing the ionisation of NH_4OH by common ion effect. If NH_4OH is added first, the concentration of OH^- is enough to precipitate hydroxide of group IV, V and VI along with group III.

(17) Why do we use freshly prepared $FeSO_4$ solution for ring test?

On keeping, $FeSO_4$ solution turns to basic ferric sulphate which is unsuitable for test.

(18) What is the function of paper ball in the test for nitrates?

Paper ball (carbon) reduces HNO_3 to NO_2

(19) Can the solution be acidified with HNO_3 in place of HCl in group II before passing H_2S gas?

No. HNO_3 being oxidising in nature, oxidises H_2S to colloidal sulphur which makes the analysis complicated.

(20) Can we use ammonium sulphate instead of ammonium chloride in group III?

No. Ammonium sulphate cannot be used as it will cause precipitation of group V radicals as their sulphates in group III.

(21) Can Na_2CO_3 be used as a precipitant in group V in place of $(NH_4)_2CO_3$?

No, Na_2CO_3 would cause precipitation of Mg^{2+} ions along with group V cations.

(22) Name a cation, which is not obtained from a metal.

Ammonium

(23) Why acetic acid is added before adding lead acetate solution?

In order to prevent the hydrolysis of lead acetate which would yield white precipitate of lead hydroxide.

(24) How can one prevent the precipitation of group IV radicals, with the second group radicals?

H_2S is passed in presence of dil. HCl. Since the solubility product for the sulphides of group III and IV cations are very high, they are not precipitated.