Salt Analysis Chemistry Questions with Solutions

Q1. Which of the following compound is formed in the borax bead test?
(a) Meta borate
(b) Ortho borate
(c) Tetra borate
(d) None of the above
Answer: (a) Meta borate is formed in the borax bead test.

Q2. Which of the following metal does not give the borax bead test?
(a) Chromium
(b) Lead
(c) Silver
(d) None of the above
Answer: Lead does not give the borax bead test.

Q3. Which of the following metal chloride imparts apple green colour to the Bunsen flame?
(a) Sodium Chloride
(b) Magnesium Chloride
(c) Calcium Chloride
(d) None of the above
Answer: (b) Magnesium chloride imparts apple green colour to the bunsen flame.

Q4. Which of the following compound gets precipitated in detecting carbon and hydrogen?
(a) Copper sulphate
(b) Carbon dioxide
(c) Calcium carbonate
(d) None of the above
Answer: (c) Calcium carbonate gets precipitated in the detection of carbon and hydrogen.

Q5. Which of the following element cannot be detected by Lassaigne's test?
(a) Sulfur
(b) Fluorine
(c) Nitrogen
(d) None of the above
Answer: (b) Fluorine cannot be detected by Lassaigne's test.

Q6. What is salt analysis?

Answer: Salt analysis, also known as qualitative inorganic or systematic qualitative analysis, is the qualitative and quantitative analysis of cations and anions present in an inorganic salt.

Q7. What is the preliminary test for chlorides?
Answer: Chlorides show the following characteristics
1. White colour
2. Intensification of pungent-smelling fumes when a glass rod dipped in ammonium hydroxide was brought near the mouth of the test tube

Q8. Which of the following elements can be identified by the Beilstein test?
(a) Chlorine
(b) Silver
(c) Nitrogen
(d) None of the above
Answer: (a) Chlorine can be identified by using the Beilstein test.

Q9. The copper wire test for halogens is commonly known as
(a) Lasssigne's Test
(b) Duma's Test
(c) Beilstein's Test
(d) Liebig's Test
Answer: (c) The copper wire test for halogens is commonly known as Beilstein's Test.

Q10. Match the following flame tests.

Column A	Column B
Bright Golden Yellow	Sodium
Pale Violet	Calcium
Deep Bluish Green	Potassium
Brick Red	Barium
Crimson Red	Copper
Pale Green	Strontium

Answer:

Column A	Column B
Bright Golden Yellow	Sodium

Pale Violet	Potassium
Deep Bluish Green	Copper
Brick Red	Calcium
Crimson Red	Strontium
Pale Green	Barium

Q11. What is a preliminary test?
Answer: Preliminary test is performed first in the salt analysis. It is used for getting an indication of the radical.

Q12. Name the radicals that might be present in a white salt?
Answer: A white salt might contain a cuprous, ferrous, ferric, cobalt cation or a nickel cation in it.

Q13. What are acidic and basic radicals?
Answer: A radical containing a positive charge is known as a basic radical while a radical containing a negative charge is known as an acidic radical.

Q14. What is the colour of nickel salt?
Answer: Nickel salts are green or bluish-green in colour.

Q15. Name some salts that produce a crackling sound on heating.
Answer: Salts like lead nitrate, potassium bromide, barium nitrate, and sodium chloride produces a crackling sound on heating.

Practise Questions on Salt Analysis

Q1. Why is the need for salt analysis?

Answer: The qualitative and quantitative analysis of salt often yields vital information about it. Such tests may not be conclusive, but they still give us a clear idea of the types of anions and cations.

Q2. What is the primary principle of salt analysis?

Answer: The fundamental principles governing salt analysis are ionic and solubility products. For a precipitate to form in a reaction, the ionic product must always be greater than the solubility product.

Q3. What is the procedure for the chloride test?

Answer: The procedure takes a few drops of concentrated sulfuric acid (H2SO4) in a test tube and adds tiny amounts of chloride salt to it.
The results include a pungent-smelling gas which is released. This gas is white. This further increases in intensity when a glass rod coated with ammonium hydroxide is brought close to the brim of the test tube.

Q4. What is the preliminary test of Group 3 anions?

Answer: Significantly, Group 3 anions do not have any prominent preliminary test. These are the phosphate and sulphate ion groups, and if no positive test results are obtained, you must directly carry out the confirmatory tests for these.

Q5. What are the steps followed in the salt analysis?
Answer: The steps followed in the salt analysis are as follows.
Step 1: Obtain the inorganic salt whose cation and anion you must identify.
Step 2: Conduct preliminary tests for the anion group-wise until you obtain a positive result. Anions and cations are classified into groups that share the same group reagent and therefore, have similar preliminary tests.
Step 3: Once you get a positive result for a preliminary test for an anion, conduct a confirmatory test for that anion. (If you get a positive result, move on to step 4. If you don't, go back to conducting preliminary tests for anions.)
Step 4: Conduct preliminary tests for cations group-wise until you obtain a positive result.
Step 5: Once a positive result is obtained, conduct a confirmatory test for that cation.
Step 6: Now that the cation and the anion are identified, obtain the chemical formula of the salt by balancing the charges of the cation and anion. For example, if your cation is Fe^{3+} and your anion is Cl^{-}, the chemical formula of the salt will be $FeCl_3$.