

Chemistry - 12th Class Chemistry Chapter 4 Short Questions Preparation

- Q1. How does nitrogen differ from other elements of its group? Give four points.
 - Ans 1: i)Nitrogen is diatomic gas and occurs in free state while other members tetra atomic solids and occur in combines state.
 - Ans 2: ii) Nitrogen does not show allotropy while other do except bismuth.
 - Ans 3: iii) Nitrogen shows +1,+2,+3,+4,+5,-1,-2,-3 oxidation states, while other elements don't show the variety of oxidation states.
 - Ans 4: iv) Nitrogen is poor conductor of heat electricity and give acidic oxides except phosphorus while other member are not.
- Q2. Why Dinitrogen Oxide is called Laughing gas?
 - **Ans 1:** Its mixture with a little oxygen, if inhaled for a sufficiently long time, produces hysterical laughter, hence it is also known as laughing gas.
- Q3. Name three allotropic forms of phosphorous>
 - Ans 1: Phosphorus can exist in at least six different solid allotropic forms.But here mentioned only three.
 - Ans 2: i) White phosphorus (P₄)
 - Ans 3: ii) Red phosphorus (macromolecule of P₄)
 - Ans 4: iii) Black phosphorus (high temperature heating of red P)
- Q4. Why SO₃is dissolved in H₂SO₄and not in water?
 - **Ans 1:** SO₃is not directly dissolved in water, since absorption is incomplete and mist of SO₃and H₂SO₄fills the factory, which causes great causes great inconvenience the workers. Therefor, SO₃ is absorbed in concentrated H₂SO₄and Oleum(H₂S₂O₇) formed can be converted to sulphuric acid of any strength by mixing adequate quantities of water.
- Q5. Give definition of allotropy. Write allotropes of phosphorus.
 - **Ans 1: Definition**:When an elements exist in different crystalline forms. These crystalline forms are called allotropic forms and this phenomenon is called allotropy.
 - Ans 2: Allotropic forms of phosphorous: Phosphorus can exist in at least six different solid allotropic forms. But here mentioned only three.

Ans 3: i) Write phosphorus (P₄)

- ii) Red phosphorus (macromolecule of P₄)
- iii) Black phosphorus (high temperature heating of red P)

Q6. Give name and formulas of Oxyacids of Phosphorous.

Ans 1: Name Formula

Phosphoric acid H₃PO₃

Orthophosphoric acid H₃PO₄

Pyrophosphoric acid $H_4P_2O_7$

Metaphosphoric acid HPO₃

Q7. How HNO₃can be two metals which evolve hydrogen upon reaction with HNO₃?

Ans 1: In laboratory,nitric acid is prepared by heating potassium nitrate crystals with concentrated sulphuric acid.

KNO_{3(s)}+ H₂SO_{4(conc)}----->KHSO_{4(aq)}+ HNO_{3(aq)}

Q8. Justify that H₂SO₄is a king of chemicals?

Ans 1: H₂SO₄has many applications in daily life,laboratories,industries etc.What's common to petrol,fertilizers,cars and soap? They,like a lot of other things require sulfuric acid to be made.That's why sulfuric acid is called the king of chemicals.

Q9. How does HNO3act as an oxidizing agent?

Ans 1: It acts as a strong oxidizing agent due to the ease with which it is decomposed.

 $2HNO_{3(aq)}$ ----> $H_2O + 2NO_2(g) + [O]_{(q)}$

Q10. Describe Ring test for confirmation of presence of nitrate ions in solution?

Ans 1: To the aqueous solution of NO_3 ions add $FeSO_4$ solution. Shake it well and add concentrated H_2SO_4 along the side of test tube. It forms a ring of brown coloured addition compound at the junction of two liquids due to the addition compound formed by the action of NO produced wit $FeSO_4$

 $FeSO_{4(aq)} + NO_{(g)} ------> FeSO_4.NO_{(aq)}$