BHARATIYA VIDYA BHAVAN'S V M PUBLIC SCHOOL, VADODARA

QUESTION BANK

CH-7 P BLOCK ELEMENTS

Vary short answer type questions **[01 marks]**

1) The stability of +5 oxidation state decreases down the group 15 of the periodic table.

Explain why?

2) The stability of +3 state increases down the group in group 15 of the periodic table.

Explain why?

3) Tendency to form pentahalides decreases down the group in group 15 of the periodic table. Why?

4) Bi (V) is a stronger oxidising agent than Sb (V). Explain.

5) Nitrogen does not form pentahalides, although it exhibits +5 oxidation state. Explain.

6) All the P- Cl bonds in PCl_5 molecule are not equivalent. Explain Why?

7) What is the covalence of nitrogen?

8) N_2 is not particularly respective. Explain.

9) Explain the following:

The chemical reactivity of nitrogen is much less than of phosphorus.

10) Red phosphorus is less reactive than white phosphorus. Why?

Short answer type questions **[02 marks]**

1) Draw the structure of white phosphorus and red phosphorus. Which one of these two types of phosphorus is more reactive and why?

2) (i) Write the reaction of thermal decomposition of sodium azide. (ii) What happens when PCl_5 is heated?

3) Complete the following chemical reaction equations:
   (i) I_2 + conc.HNO_3 --------
   (ii) $HgCl_2 + PH_3$ ---------

4) Give an example to show the effect of concentration of nitric acid on the formation of oxidation product.

5) What happens when?
   (i) PCl_5 its heated

(ii) H_3PO_3 is heated

6) State the difference in properties of white and red phosphorus.

7) (i) PH_3 has lower boiling point than NH_3, Why?
(ii) Write balanced equation, when ammonia is dissolved in water.

8) Explain the following observations.
(i) The molecules NH_3 and NF_3 have dipole moments which are of opposite direction. (ii) all the bonds in PCl_5 molecule are not equivalent.

9) What is laughing gas? Why is it so called? How is it prepared?

10) Give reason for the following:
(i) Conc. HNO_3 turns yellow on exposure to sunlight. (ii)
PCl_5 behaves as an ionic species in solid state.

Short answer type questions **[03 marks]**

1) Give reason of the followings:
(i) Where R is an alkyl group, $R_3P = O$ exists but $R_3N = O$ does not.
(ii) $PbCl_4$ is more covalent than $PbCl_2$
(iii) At room temperature N_2, is much less reactive.

2) Explain each of the followings:
(i) Nitrogen is much less reactive than phosphorous.
(ii) The stability of +5oxidation state decreases down the group 15.
(iii) The bond angle (O-------N-------O) are not of the same value in NO^-_2 and NO^+_2

3) Name three oxoacids of nitrogen. Write the disproportionation reaction of that oxoacids of nitrogen in which nitrogen is in +3 oxidation state.

4) (i) Why does PCl_3 fume in moisture?
(ii) Why is BiH_3 the strongest reducing agent amongst all the hydrides of group 15 elements?
(iii) What happens when H_3PO_3 is heated?

5) When conc. H_2SO_4 was added to an unknown salt present in a test tube, a brown gas (*A*) was evolved. This gas intensified when copper turnings were added into test tube. On cooling gas (*A*) changed into a colourless gas (*B*).
(i) Identify the gases '*A*' and '*B*'.
(ii) Write the equations for the reactions involved.

6) Draw the structure of
(i) H_2SO_3 (ii) H_2SO_4 (iii) $H_2S_2O_7$

Short answer type questions **[05 marks]**

1) (i) How will sulphur dioxide prepared in:
(a) laboratory
(b) Industry?
(ii) What happens when sulphur dioxide is passed through water and reacts with sodium hydroxide? Write balanced equation(s).
(iii) Write any two uses of it.

Value Based Question

1) Parul is a research scholar in CPPRI, Saharanpur. One of her guide at CPPRI told her that to bleach pulp (used to make paper), she has two options. Either she can use cheap and easily available chlorine or more expensive ozone. However, using ozone to bleach pulp is a better method than using chlorine.
Read the above passage and answer the following questions:
(i) Write the method of preparation of ozonised oxygen from oxygen.
(ii) Why does O_3 act as a powerful oxidising agent?
(iii) Why ozone is considered to be a better bleaching agent than chlorine?
(iv) What are the values associated with the use of ozone as a bleaching agent?