KJB SCIENCE SCHOOL

A PREMIER INSTITUTE OF EDUCATION
PH: 9412161447, 9639017435, 9259363937

PRACTICE SHEET:2 [2014-15] CLASS – XII [Chemistry] CHAPTER –> p-BLOCK ELEMENTS

Sharad Fauzdar 99% {TOPPER OF AIR FORCE SCHOOL-2014}

Pranil Mittal 99% {TOPPER OF SIMPKINS SCHOOL- 2014}

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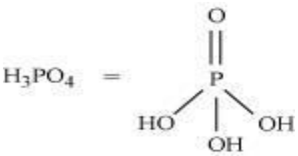
Ans:



Since there are three OH groups present in H_3PO_4, its basicity is three i.e., it is a tribasic acid.

Q.12 What happens when H_3PO_3 is heated?

Ans: H_3PO_3, on heating, undergoes disproportionation reaction to form PH_3 and H_3PO_4. The oxidation numbers of P in H_3PO_3, PH_3, and H_3PO_4 are +3, −3, and +5 respectively. As the

which is absent in H_2S. Molecules of H_2S are held together only by weak van der Waal's forces of attraction. Hence, H_2O exists as a liquid while H_2S as a gas.

Q.16 Which of the following does not react with oxygen directly?
Zn, Ti, Pt, Fe

Ans:Pt is a noble metal and does not react very easily. All other elements, Zn, Ti, Fe, are quite reactive. Hence, oxygen does not react with platinum (Pt) directly.

Q.17 Complete the following reactions:
(i) $C_2H_4 + O_2 \rightarrow$
(ii) $4Al + 3O_2 \rightarrow$

oxidation number of the same element is decreasing and increasing during a particular reaction, the reaction is a disproportionation reaction.**

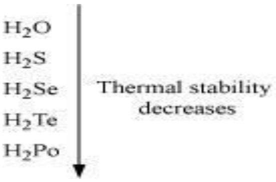
$$\underset{\substack{\text{Orthophosphorous acid}\\(+3)}}{4H_3PO_3} \xrightarrow{\Delta} \underset{\substack{\text{Orthophosphoric acid}\\(+5)}}{3H_3PO_4} + \underset{\substack{\text{Phosphine}\\(-3)}}{PH_3}$$

Q.13 List the important sources of sulphur.

Ans:Sulphur mainly exists in combined form in the earth's crust primarily as sulphates [gypsum ($CaSO_4.2H_2O$), Epsom salt ($MgSO_4.7H_2O$), baryte ($BaSO_4$)] and sulphides [(galena (PbS), zinc blends (ZnS), copper pyrites ($CuFeS_2$)].

Q.14 Write the order of thermal stability of the hydrides of Group 16 elements.

Ans:The thermal stability of hydrides decreases on moving down the group. This is due to a decrease in the bond dissociation enthalpy (H−E) of hydrides on moving down the group.Therefore,



Q.15 Why is H_2O a liquid and H_2S a gas?

Ans:H_2O has oxygen as the central atom. Oxygen has smaller size and higher electronegativity as compared to sulphur. Therefore, there is extensive hydrogen bonding in H_2O,

Ans :(i)

$$\underset{\text{Ethene}}{C_2H_4} + \underset{\text{Oxygen}}{3O_2} \longrightarrow \underset{\text{Carbon dioxide}}{2CO_2} + \underset{\text{Water}}{2H_2O}$$

(ii)

$$\underset{\text{Aluminium}}{4Al} + \underset{\text{Oxygen}}{3O_2} \longrightarrow \underset{\text{Alumina}}{2Al_2O_3}$$

Q.18 Why does O_3 act as a powerful oxidising agent?

Ans:Ozone is not a very stable compound under normal conditions and decomposes readily on heating to give a molecule of oxygen and nascent oxygen. Nascent oxygen, being a free radical, is very reactive.

$$\underset{\text{Ozone}}{O_3} \xrightarrow{\Delta} \underset{\text{Oxygen}}{O_2} + \underset{\text{Nascent oxygen}}{[O]}$$

Therefore, ozone acts as a powerful oxidising agent.

Q.19 How is O_3 estimated quantitatively?

Ans:Quantitatively, ozone can be estimated with the help of potassium iodide. When ozone is made to react with potassium iodide solution buffered with a borate buffer (pH 9.2), iodine is liberated. This liberated iodine can be titrated against a standard solution of sodium thiosulphate using starch as an indicator. The reactions involved in the process are given below.

$$\underset{\text{Iodide}}{2\,I^-} + H_2O + \underset{\text{Ozone}}{O_3} \longrightarrow 2\,OH^- + \underset{\text{Iodine}}{I_2} + O_2$$

$$I_2 + \underset{\substack{\text{Sodium}\\\text{thiosulphate}}}{2\,Na_2S_2O_3} \longrightarrow \underset{\substack{\text{Sodium}\\\text{tetrathionate}}}{Na_2S_4O_6} + 2\,NaI$$