

Chapter – 07

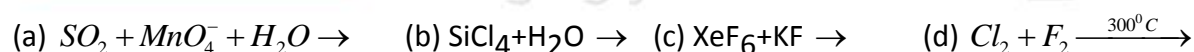
p-Block Elements

Very Short Answer Type Questions

01. Write the formula of any two oxoacids of sulphur.
02. Explain why ozone is thermodynamically less stable than oxygen?
03. Write the order of the thermal stability of the hydrides of the group-16 element.
04. Why do noble gases form compounds with fluorine and oxygen only?
05. Draw the structure of the following :
- (i) XeO_3 (ii) H_2SO_4
06. Explain why fluorine forms only one oxo-acid, HOF?
07. Which allotrope of sulphur is thermodynamically stable at room temperature?
08. Sulphur has a greater tendency for catenation than oxygen, why?
09. Complete the following equations.
- (i) $Ca(OH)_2 + Cl_2 \rightarrow$ (ii) $ClF_2 + H_2SO_4 \rightarrow$
10. In aqueous medium, HCl is a stronger acid than HF.

Short Answer Type Questions

11. Write the balanced equations for the following reactions:



12. Draw the structure of the following : (i) H_2SO_3 (ii) $HClO_3$
13. Complete the following equations : (i) $C + conc.H_2SO_4 \rightarrow$ (ii) $XeF_2 + H_2O \rightarrow$
14. Account for the following.
- (i) Noble gases have very low boiling points.
- (ii) Sulphur in vapor form exhibits paramagnetic behavior.
15. Write the structure of the following : (i) BrF_3 (ii) XeF_4
16. Give reasons :
- (i) SO_2 is reducing while TeO_2 is an oxidizing agent.
- (ii) Only higher members of group 18 of the periodic table are expected to form compounds.

(iii) ICl is more reactive than I_2 .

17. Give reasons:

(i) Xenon does not form fluorides such as XeF_3 and XeF_5 .

(ii) Out of noble gases, only xenon is known to form established chemical compounds.

18. How would you account for the following:

(i) Sulphur hexafluoride is less reactive than sulphur tetrafluoride.

(ii) Of the noble gases only xenon forms known chemical compounds.

19. Answer the following:

(i) Which neutral molecule would be isoelectronic with ClO^- ?

(ii) F_2 has lower bond dissociation enthalpy than Cl_2 , why?

20. Complete and balance following chemical equation:

(i) $NaOH$ (cold & dil.) + $Cl_2 \rightarrow$ (b) $S + H_2SO_4$ (conc.) \rightarrow (c) $Fe^{3+} + SO_2 + H_2O \rightarrow$

Long Answer Type Questions

21. Give reasons for the following.

(i) Acidic character increases from HF to HI

(ii) Electron gain enthalpy of halogens is largely negative.

(iii) There is a large difference between the melting and boiling points of oxygen and sulphur?

22. Complete the following chemical reaction equations:

(i) $XeF_6 + kF \rightarrow$ (ii) $I_2 + H_2O + Cl_2 \rightarrow$ (iii) $2Se_2Cl_2 \rightarrow$

(b) A gas (X) is used as a disinfectant and as a germicide for sterilizing water. It also converts black lead sulphide to a colorless substance (B). Identify gas (A) and the colorless substance (B)

23. (a) An element 'A' exists as a yellow solid in the standard state. It forms volatile hydride 'B' which is a foul-smelling gas and is extensively used in qualitative analysis of salts. When treated with oxygen 'B' form an oxide 'C' which is a colorless pungent-smelling gas. This gas when passed through acidified $KMnO_4$ solution decolorizes it. 'C' gets oxidized to another oxide 'D' in the presence of a heterogeneous catalyst. Identify A, B, C, and D and also give the chemical equation of the reaction of 'C' with acidified $KMnO_4$ solution and for the conversion of 'C' to 'D'.

(b) Write the structural formulae of the following compounds: (i) BrF_3 (ii) XeF_2

24. Draw the structures of the following:

(i) $\text{H}_2\text{S}_2\text{O}_8$ (ii) HClO_4

(b) How would you account for the following:

(i) The stability of the +6 oxidation state decreases in Group - 16 down the group.

(ii) Sulphur has a greater tendency for catenation than oxygen.

(iii) F_2 is a stronger oxidizing agent than Cl_2 .

25. Account for the following :

(a) (i) Acidic character increases from HF to HI.

(ii) There is a large difference between the melting point and the boiling point of oxygen and sulphur.

(iii) Cl_2 is a powerful bleaching agent.

(b) Draw the structure of the following. (i) ClF_3 (ii) XeF_4

26. (a) Complete the following chemical equations:

(i) $\text{XeF}_2 + \text{PF}_5 \rightarrow$ (ii) $\text{Cl}_2(\text{g}) + \text{NaOH}(\text{aq}) \rightarrow$

(hot and conc.)

(b) Explain the following observations:

(i) I - Cl is more reactive than Cl_2

(ii) Sulphur in vapour state exhibits paramagnetism.

(iii) Fluorine does not exhibit any positive oxidation state.

27. (a) Complete the following reactions:

(i) $\text{PbS} + \text{O}_2 \rightarrow$ (ii) $\text{XeF}_6 + \text{NaF} \rightarrow$

(b) Arrange the following in increasing order of property indicated, giving reason.

(i) Hydrides of Group - 17 acidic strength (ii) Hydrides of Group - 17 boiling point

(iii) Hydrides of Group - 16 reducing characters.

28. (a) What happens when

(i) Chlorine gas is passed through excess NH_3 ?

(ii) Sulphur dioxide gas is passed through an aqueous solution of a Fe(III) salt?

(b) Answer the following

(i) In which temperature α - sulphur stable.

(ii) Why fluorine does not play the role of a central atom in interhalogen compounds?

(iii) Why do noble gases have very low boiling points?

29. (a) Draw the molecular structures of the following compounds:

(i) HClO_3 (ii) $\text{H}_2\text{S}_2\text{O}_8$

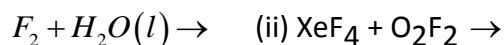
(b) Give reasons for the following.

(i) Above 1000 K sulphur shows paramagnetism.

(ii) Although electron gain enthalpy of fluorine is less negative than that of chlorine, yet fluorine is a better oxidizing agent than chlorine.

(iii) F_2 is more reactive than ClF_3 but ClF_3 is more reactive than Cl_2 .

30. (a) Complete the following chemical reaction equations: (i)



(b) Draw the structures of the following molecules

(i) XeF_6 (ii) $\text{H}_2\text{S}_2\text{O}_7$ (iii) XeOF_4

