p-Block Elements-II

Date Planned : __ / __ / __	CBSE Pattern	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-0	Exact Duration :_____

Very Short Answer Type **(1 Mark)**

1. Why is N_2 less reactive at room temperature ?

2. Explain why on being slowly passed through water PH_3 forms bubbles but NH_3 dissolves ?

3. Give reasons for the following : OF_6 compound is not known

4. How would you account for the following ?
XeF_2 is linear molecules without a bend

5. The acidic strength of compounds increases in the order : PH_3, H_2S, HCl

6. What is the basicity of H_3PO_3 and why ?

7. Why does NO_2 dimerise ?

8. What are silanes ?

9. Complete the equation, $NH_3 + NaOCl$

Short Answer Type-I **(2 Marks)**

10. State the types of hybrid orbitals associated with (i) P in PCl_5 and (ii) S in SF_6.

11. Give appropriate reason for each of the following observation :

(i) Fluorine is a stronger oxidizing agent than chlorine, though fluorine has lower electron affinity than chlorine.

(ii) NO_2 readily forms a dimer, whereas ClO_2 does not.

12. Give chemical evidence for each of the following :
+1 oxidation state is more stable for thallium than that for gallium.

13. Write a chemical reaction to show that conc. H_2SO_4 can be an oxidizing agent.

14. Write balanced chemical equations for the following reactions :

(i) XeF_4 is hydrolysed.

(ii) Excess of SO_2 reacts with sodium hydroxide solution.

15. Arrange the following in order of the property mentioned :

(i) PH_3, NH_3, SbH_3, AsH_3 (Increasing basic strength)

(ii) HCl, HBr, HI, HF (Increasing acid strength)

16. Complete the following equations :

(i) $Ag + PCl_5 \longrightarrow$ **(ii)** $CaF_2 + H_2SO_4 \longrightarrow$

17. On heating $Pb(NO_3)_2$ a brown gas is evolved which undergoes dimerization on cooling. Identify the gas.

18. What is "Butter of tin" ?

19. What is thermite ?

20. Why; SiF_6^{2-} is known whereas $SiCl_6^{2-}$ is not ?

21. Sulphur in vapour state exhibits paramagnetic behaviour, why ?

Short Answer Type-II **(3 Marks)**

22. **(a)** Arrange $HClO_3$, $HClO_2$, HOCl and $HClO_4$ in order of increasing acid strength. Give reason for your answer.

(b) Write the balanced chemical equation for the reaction of Cl_2 with hot and conc. NaOH solution. Justify that this reaction is a disproportionation reaction.

(c) Give one use of ClF_3.

23. **(a)** Why do some noble gases form compounds with fluorine and oxygen only ?

(b) How are the following compounds prepared from XeF_6 (i) $XeOF_4$ (ii) XeO_3

24. Suggest a possible reason for the following observations :

(i) In the solid state, PCl_5 behaves as an ionic species.

(ii) H_2S is more acidic than water.

(iii) Flourine forms the largest number of inter-halogen compounds amongst the halogens.

25. How would you account for the following ?

(i) The value of electron gain enthalpy with negative sign of Sulphur is higher than that for oxygen.

(ii) NF_3 is an exothermic compound but NCl_3 is endothermic compound.

26. **(a)** Complete the following chemical reaction equation:

(i) $P_4 + SO_2Cl_2 \longrightarrow$

(ii) $XeF_4 + H_2O \longrightarrow$

(b) Explain the following observations giving appropriate reason.

(i) The stability of $+5$ oxidation state decreases down the group in group 15 of the periodic table.

(ii) Halogen are strong oxidizing agents.

27. Describe the following about halogens (Group 17 elements) :
Formation of oxoacids of halogen and the structures of oxoacids of chlorine only.

28. Complete and balance the following chemical equations :

(i) $NH_3 + NaOCl \longrightarrow$

(ii) $XeF_4 + SbF_3 \longrightarrow$

29. NaOCl solution becomes unstable on warming. What happens to it?

30. Arrange $HClO_4$, HIO_4 and $HBrO_4$ in order of increasing thermal stability.

Long Answer Type **(5 Mark)**

31. Explain giving reason each of the following :

(i) CCl_4 is not hydrolysed with water but $SiCl_4$ is easily hydrolysed.

(ii) Nitrogen does not form pentachloride but phosphorus forms.

(iii) SF_6 is well known but SH_6 is not known.

(iv) BF_3 is a weaker Lewis acid than BCl_3.

32. Explain the following observation :

(i) Most of the known noble gas compounds are those of xenon.

(ii) ClF_3 exists but FCl_3 does not.

(iii) Among the hydrides of elements of group 16, water shows unusual physical properties.

(iv) Unlike phosphorus, nitrogen shows little tendency for catenations.

33. **(a)** Explain the laboratory preparation of phosphine.

(b) What happens when phosphine reacts with copper sulphate and mercuric chloride solution ?

(c) Why PH_3 is basic in nature.

34. Account for the following :

(i) All the bonds in PCl_5 are not equivalent.

(ii) Among the noble gases, only xenon is known to form true chemical compounds.

(iii) PbO_2 is a stronger oxidizing agent than SnO_2.

35. How are interhalogen compounds formed? What general compositions can be assigned to them ?

36. Assign reason for the following :

(i) H_3PO_2 is a stronger reducing agent than H_3PO_4.

(ii) Sulphur shows more tendency for catenation than Oxygen

(iii) Reducing character increases from HF to HI.

37. Draw the structure of (i) XeF_2 (ii) XeF_4 (iii) XeF_6 and write its geometry.

38. Discuss the different allotropic forms of sulphur.

39. Discuss the preparation and properties of chloric acid.

40. What was the reasoning applied be Neil Bartlett for carrying out reaction of Xe with PtF_6 ?