p-Block Elements-1

Date Planned : __ / __ / __	Daily Tutorial Sheet	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level-0	Exact Duration :_____

Very Short Answer Type (1 Mark)

1. White fumes appear around the bottle of anhydrous aluminium chloride. Give reason.

2. Boron is unable to form BF_6^{3-} ion. Explain.

3. $[SiF_6]^{2-}$ is known where as $[SiCl_6]^{2-}$ not. Give possible reasons.

4. Diamond is covalent, yet it has high melting point. Why ?

5. What are silicones ?

6. Why does boron trifluoride behave as a Lewis acid ?

Short Answer Type-(2 Marks)

7. Is boric acid a protic acid ? Explain.

8. Explain what happens when boric acid is heated.

9. Describe the shapes of BF_3 and $[BH_4]^-$. Assign the hybridization of boron in these species.

10. Write reactions to justify amphoteric nature of aluminium.

11. Write the resonance structures of CO_3^{2-} and HCO_3^-.

12. What is the state of hybridization of carbon in (a) CO_3^{2-} (b) diamond (c) graphite ?

13. Suggest reasons why the $B-F$ bond lengths in BF_3 (130 pm) and BF_4^- (143 pm) differ.

Short Answer Type-(3 Marks)

14. If $B-Cl$ bond has a dipole moment, explain why BCl_3 molecule has zero dipole moment.

15. Write the chemical formula of the following substances:

(i)	Borax	**(ii)**	Metaboric acid
(iii)	Boric acid	**(iv)**	Sodium metaborate
(v)	Inorganic benzene	**(vi)**	Inorganic graphite

16. How would you explain the lower atomic radius of Ga as compared to Al ?

17. Why boron does not form B^{3+} ion ?

18. What are the factors responsible for the anomalous behaviour of carbon ?

19. What do you mean by catenation? Name the group 14 element which has the maximum tendency towards catenation ?

Lon' Ans er Type !& M"rks#

20. Suggest a reason as to why CO is poisonous.

21. Rationalise the given statements and give chemical reactions :

(i) Lead chloride reacts with Cl_2 to give $PbCl_2$

(ii) Lead (IV) chloride is highly unstable towards heat

(iii) Lead is known not to form an iodide, PbI_4

22. What happens when

(a) Borax is heated strongly

(b) Boric acid is added to water,

(c) Aluminium is treated with dilute NaOH

(d) BF_3 is reacted with ammonia

23. Write balanced equations for :

(i) $BF_3 + LiH \longrightarrow$ **(ii)** $B_2H_6 + H_2O \longrightarrow$ **(iii)** $NaH + B_2H_6 \longrightarrow$

(iv) $H_3BO_3 \xrightarrow{\Delta}$ **(v)** $Al + NaOH \longrightarrow$ **(vi)** $B_2H_6 + NH_3 \longrightarrow$

24. How is excessive content of CO_2 responsible for global warming ?

25. Give reasons :

(i) Conc. HNO_3 can be transported in aluminium container.

(ii) A mixture of dilute NaOH and aluminium pieces is used to open drain.

(iii) Graphite is used as an lubricant.

(iv) Diamond is used as an abrasive.

(v) Aluminium alloys are used to make aircraft body.

(vi) Aluminium utensils should not be kept in water overnight.

(vii) Aluminium wire is used to make transmission cables.