CHEMISTRY

NCERT - NCERT CHEMISTRY(TELUGU)

THE P-BLOCK ELEMENTS

Examples

1. Though nitrogen exhibits +5 oxidation state, it does not form pentahalide. Give reason.

Watch Video Solution

2. PH_3 has lower boiling point than NH_3. Why ?

Watch Video Solution

3. Write the reaction of thermal decomposition of sodium azide.

Watch Video Solution

4. Why does NH_3 act as a Lewis base ?

Watch Video Solution

5. Why does NO_2 dimerise ?

Watch Video Solution

6. In what way can it be proved that PH_3 is basic in nature ?

Watch Video Solution

7. Why does PCl_3 fume in moisture ?

Watch Video Solution

8. Are all the five bonds in $\mathrm{PCl_5}$ molecule equivalent ? Justify your answer.

Watch Video Solution

9. How do you account for the reducing behaviour of H_3PO_2, on the basis of its structure ?

Watch Video Solution

10. Elements of Group 16 generally show lower value of first ionisation enthalpy compared to the corresponding periods of group 15. Why?

Watch Video Solution

11. H_2S is less acidic than H_2Te. Why ?

Watch Video Solution

12. Which form of sulphur shows paramagnetism ?

Watch Video Solution

13. Halogens have maximum negative electron gain enthalpy in the respective periods of the

periodic table. Why ?

Watch Video Solution

14. Although electron gain enthalpy of fluorine is less negative as compared to chlorine, fluorine is a stronger oxidising agent than chlorine. Why ?

Watch Video Solution

15. Fluorine exhibits only - 1 oxidation state whereas other halogens exhibit +1, +3, +5 and +7 oxidation states also. Explain.

Watch Video Solution

16. Write the balanced chemical equation for the reaction of Cl_2 with hot and concentrated NaOH. Is this reaction a disproportionation reaction ? Justify.

Watch Video Solution

17. When HCl reacts with finely powdered iron, it forms ferrous chloride and not ferric chloride. Why ?

Watch Video Solution

18. Discuss the molecular shape of BrF_3 on the basis of VSEPR theory.

Watch Video Solution

19. Why are the elements of group 18 known as noble gases ?

Watch Video Solution

20. Noble gases have very low boiling points. Why ?

Watch Video Solution

21. Does the hydrolysis of XeF_6 lead to a redox reaction ?

Watch Video Solution

Intext Question

1. Why are pentahalides more covalent than trihalides ?

Watch Video Solution

2. Why is BiH_3 the strongest reducing agent amongst all the hydrides of Group 15 elements

?

Watch Video Solution

3. Why is N_2 less reactive at room temperature ?

Watch Video Solution

4. Mention the conditions required to maximise the yield of ammonia.

Watch Video Solution

5. How does ammonia react with a solution of Cu^{2+} ?

Watch Video Solution

6. What is the covalence of nitrogen in N_2O_5 ?

Watch Video Solution

7. Bond angle in PH_4^+ is higher than that in PH_3. Why ?

Watch Video Solution

8. What happens when white phosphorus is heated with concentrated NaOH solution in an inert atmosphere of CO_2 ?

Watch Video Solution

9. What happens when PCl_5 is heated ?

Watch Video Solution

10. Write a balanced equation for the hydrolytic reaction of PCl_5 in heavy water.

Watch Video Solution

11. What is the basicity of H_3PO_4 ?

Watch Video Solution

12. What happens when H_3PO_3 is heated

Watch Video Solution

13. List the important sources of sulphur.

Watch Video Solution

14. Write the order of thermal stability of the hydrides of group 16 elements.

Watch Video Solution

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

Watch Video Solution

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

Watch Video Solution

17. Complete the following reactions:

(i) $C_2H_4 + O_2 \rightarrow$

(ii) $4Al + 3O_2 \rightarrow$

Watch Video Solution

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

Watch Video Solution

19. How is O_3 estimated quantitatively ?

Watch Video Solution

20. What happens when sulphur dioxide is passed through an aqueous solution of Fe (III) salt ?

Watch Video Solution

21. Comment on the nature of two S - O bonds formed is SO_2 molecule. Are the two S - O bonds in this molecule equal ?

Watch Video Solution

22. How is the presence of SO_2 detected ?

Watch Video Solution

23. Mention three areas in which H_2SO_4 plays an important role.

Watch Video Solution

24. Write the conditions to maximize the yield of H_2SO_4 by contact process.

Watch Video Solution

25. Why is $K_{a_2} < < K_{a_1}$ for H_2SO_4 in water ?

Watch Video Solution

26. Considering the parameters such as bond dissociation enthalpy, electron gain enthalpy and hydration enthalpy, compare the oxidising power of F_2 and Cl_2.

Watch Video Solution

27. Give two examples to show the anomalous behaviour of flurine.

Watch Video Solution

28. Sea is the greatest source of some halogens. Comment.

Watch Video Solution

29. Give the reason for bleaching action of Cl_2 ?

Watch Video Solution

30. Name some poisonous gases which can be prepared from chlorine gas.

Watch Video Solution

31. Why is ICl more reactive than I2?

Watch Video Solution

32. Why is helium used in diving apparatus ?

Watch Video Solution

33. Balance the following equation :

$XeF_6 + H_2O \rightarrow XeO_2F_2 + HF$

Watch Video Solution

34. Why has it been difficult to study the chemistry of radon ?

Watch Video Solution

Exercises

1. Discuss the general characteristics of Group - 15 elements with reference to their electronic configuration, oxidation state, atomic size, ionization enthalpy and electronegativity.

Watch Video Solution

2. Why does the reactivity of nitrogen differ from phosphorus ?

Watch Video Solution

3. Discuss the trends in chemical reactivity of group 15 elements

Watch Video Solution

4. NH_3 forms hydrogen bonds but PH_3 does not - why ?

Watch Video Solution

5. How is nitrogen prepared in the laboratory ? Write the chemical equations of the reactions

involved.

Watch Video Solution

6. How is ammonia manufactured by Haber's process ? Explain the reactions of ammonia with

$CuSO_{4(aq)}$

Watch Video Solution

7. Illustrate how copper metal can give different products on reaction with $\mathrm{HNO_3}$.

Watch Video Solution

8. Give the resonating structures of NO_2 and N_2O_5.

Watch Video Solution

9. The HNH angle is higher than HPH, HAsH and HSbH angles - Why ?

Watch Video Solution

10. Why does $R_3P = O$ exist but $R_3B = O$ does not (R = alkyl group) ?

Watch Video Solution

11. Explain why is NH_3 basic while $\mathrm{BiH_3}$ is only feebly basic.

Watch Video Solution

12. Nitrogen exists as diatomic molecule and phosphorus as P_4 - Why ?

Watch Video Solution

13. Write the difference between the properties of white phosphorus and red phosphorus.

Watch Video Solution

14. Why does nitroggen show catenation properties less than phosphorus ?

Watch Video Solution

15. Give the disproportionation reaction of H_3PO_3.

Watch Video Solution

16. $PCl\_(3)`$ can act as an oxidizing as well as a reducing agent - Justify.

Watch Video Solution

17. Justify the placement of O, S, Se, Te and Po in the same group of the periodic table in terms of electronic configuration, oxidation states and hydride formation.

Watch Video Solution

18. Why is dioxygen a gas but sulphur a solid ?

Watch Video Solution

19. Knowing the electron gain enthalpy values for $O \rightarrow O^-$ and $O \rightarrow O^{2-}$ as -141 and $702\ \mathrm{kJ\ mol^{-1}}$ respectively, how can you account for the formation of a large number of oxides having O^{2-} species and not O^- ?

Watch Video Solution

20. Which aerosols deplete ozone?

Watch Video Solution

21. Describe the manufacture of H_2SO_4 by contact process.

Watch Video Solution

22. How is SO_2 an air pollutant?

Watch Video Solution

23. Why are halogens strong oxidising agents?

Watch Video Solution

24. Explain why fluorine forms only one oxoacid, HOF.

Watch Video Solution

25. Explain why inspite of nearly the same electronegativity, oxygen forms hydrogen bonding while chlorine does not.

Watch Video Solution

26. Write two uses of ClO_2.

Watch Video Solution

27. Why are halogens coloured ?

Watch Video Solution

28. Write the reactions of F_2 and Cl_2 with water.

Watch Video Solution

29. How can you prepare Cl_2 from HCl and HCl from Cl_2 ? Write the reactions.

Watch Video Solution

30. What inspired Bartlett for carrying out reaction between Xe and PtF_6 ?

Watch Video Solution

31. What are the oxidation states of phosphorus in the following

H_3PO_3

(ii) PCl_3

(iii) Ca_3P_2

(iv) Na_3PO_4

(v) POF_3

Watch Video Solution

32. Write balanced equations for the folliowing.

NaCl is heated with $\mathrm{Conc.H_2}SO_4$ in the presence of MnO_2.

Watch Video Solution

33. How are Xenon fluorides XeF_2, XeF_4 and XeF_6 obtained ?

Watch Video Solution

34. With which neutral molecule, ClO^- is isoelectronic ? Is that molecule a Lewis base ?

(Hint : ClF, Yes)

Watch Video Solution

35. How are XeO_3 and $XeOF_4$ prepared ?

Watch Video Solution

36. Arrange the following in the order of the property indicated for each set.

F_2, Cl_2, Br_2, I_2- increasing bond dissociation enthalpy.

Watch Video Solution

37. Which of the following does not exist ?

a) $XeOF_4$ b) NeF_2 c) XeF_2 d) XeF_6

Watch Video Solution

38. Give the formula and describe the structure of a noble gas species which is isostructural with:

ICl_4^-

(ii) IBr_2^-

(iii) BrO_3^-

Watch Video Solution

39. Why do noble gases have comparatively large atomic sizes ?

Watch Video Solution

40. List out the uses of Neon.

Watch Video Solution