

CHEMISTRY OF P-BLOCK ELEMENTS

CHAPTER-7

TEST-A

SOLVED

Time: 1 hr.

Max. Marks: 30

SECTION-A

Tick the correct option:

- In each of the following oxoacids, sulphur is in the +6 oxidation state except. [1]
(i) Sulphurous acid, H_2SO_3 (ii) Pyrosulphuric acid, $\text{H}_2\text{S}_2\text{O}_7$
(iii) Peroxomonosulphuric acid, H_2SO_5 (iv) Peroxodisulphuric acid, $\text{H}_2\text{S}_2\text{O}_8$
- Which of the following species is isostructural with XeF_2 ? [1]
(i) ICl_2^- (ii) ICl_2^+ (iii) O_2F_2 (d) All of these
- The correct statement is [1]
(i) In nitric acid, nitrogen is sp^3 hybridised.
(ii) Carbon dioxide gas and sulphur dioxide gas can be distinguished by using lime water.
(iii) Pyrophosphoric acid, $\text{H}_4\text{P}_2\text{O}_7$ has basicity of 4
(iv) Phosphine is a better proton acceptor than ammonia

Assertion-Reason type Questions:

- (i) If assertion and reason both are correct and reason is the correct explanation of assertion.
(ii) If assertion and reason both are correct and reason is not the correct explanation of assertion.
(iii) If assertion is correct and reason is wrong.
(iv) If assertion is wrong and reason is correct.
- Assertion: Ozone and sulphurdioxide both are used as bleaching agent. [1]
Reason: Both ozone and sulphur dioxide are isostructural.
- Assertion: In group 17, fluorine forms only one oxoacid, HOF [1]
Reason: Fluorine has the most negative electron gain enthalpy.

One word /One Sentence type Questions.

- What is the covalency and oxidation state of nitrogen in N_2O_5 ? [1]
- How many 90° bond angles present in BrF_5 ? [1]

SECTION-B

8. Arrange in order of increasing property indicated: [2]
 (i) NH_3 , H_2O , HF , HI (acidic strength)
 (ii) NH_3 , PH_3 , AsH_3 , SbH_3 , BiH_3 (boiling point)
9. Give reason: [2]
 (i) Ammonia gas when passed through water gives a clear solution but phosphine forms bubbles.
 (ii) Fluorine, F_2 is the strongest oxidising agent in group 17.
10. Chlorine gas when passed through hot and concentrated NaOH form [2]
 NaCl , NaClO_3 and H_2O .
 (i) Write a balanced chemical equation for the reaction.
 (ii) Justify that the reaction is a disproportionation reaction.
11. Account for the following: [3]
 (i) $\text{Bi}(+5)$ is a stronger oxidant than $\text{Sb}(+5)$
 (ii) Second acid dissociation constant of H_2SO_4 is less than its first acid dissociation constant.
 (iii) Xenon compounds contains only oxygen and fluorine.
12. Give the preparation of sulphur dioxide in the laboratory. Draw its structure. [3]
 How will you detect the presence of sulphur dioxide qualitatively?
13. Draw the structures of the following acids and calculate the oxidation of sulphur in each of these: [3]
 (i) $\text{H}_2\text{S}_2\text{O}_3$ (ii) $\text{H}_2\text{S}_2\text{O}_7$ (iii) H_2SO_4
14. (i) How many P-P sigma bonds present in cyclotrimeta phosphoric acid $\text{H}_3\text{P}_3\text{O}_9$? [3]
 (ii) Complete and balance the following equation:
 (a) $\text{ClF}_3 + \text{U} \rightarrow$
 (b) $\text{AsF}_5 + \text{XeF}_2 \rightarrow$
15. (i) How does copper reacts differently with dilute HNO_3 and conc. HNO_3 ? Explain with the help of equations.
 (ii) Explain the brown ring test chemistry of nitrate ion, NO_3^- .
 (iii) Which of the following structure of nitric acid is not acceptable and why? [2+2+1]

