JEE MAIN : CHAPTER WISE TEST PAPER-4

SUBJECT :- CHEMISTRY **DATE.....**
CLASS :- 12th **NAME.....**
CHAPTER :- P-BLOCK **SECTION.....**

(SECTION-A)

1. Phosphine is not obtained, when
(A) Red phosphorous is heated with NaOH
(B) White phosphorous is heated with NaOH
(C) Ca_3P_2 reacts with water
(D) Phosphorous trioxide is boiled with water

2. Antimony pentafluoride, SbF_5 reacts with XeF_4 to form an adduct. The shapes of cation and anion in the compound are respectively.
(A) square planar, trigonal bipyramidal
(B) Bent-T-shaped, octahedral
(C) square pyramidal, octahedral
(D) square planar, octahedral

3. Concentrated nitric acid reacts with iodine to give
(A) HOI (B) HI
(C) $HOIO_2$ (D) $HOIO_3$

4. When $KHSO_4$ is added into a concentrated solution of H_2SO_4 the acidity of the solution.
(A) Increases (B) decreases
(C) remains (D) can't be predicted

5. Which of the following halides cannot be hydrolysed?
(I) TeF_6 (II) SF_6
(III) NCl_3 (IV) NF_3
Choose the correct code :
(A) III & IV (B) I, II & III
(C) I, II & IV (D) II & IV

6. Hydrolysis of one mole of Peroxo-disulphuric acid produces.
(A) Two moles of sulphuric acid
(B) Two moles of peroxomono-sulphuric acid
(C) One mole of sulphuric acid, one mole of peroxomono-sulphuric acid
(D) One mole of sulphuric acid, one mole of peroxomono-sulphuric acid and one mole of hydrogen peroxide.

7. Only iodine forms hepta-fluoride IF_7, but chlorine and bromine give penta-fluorides. The reason for this is
(A) low electron affinity of iodine
(B) unusual pentagonal bipyramidal structure of IF_7
(C) that the larger iodine atom can accommodate more number of smaller fluorine atom around it
(D) low chemical reactivity of IF_7

8. Which is the correct sequence in the following properties. For the correct order, mark (T), and for the incorrect order mark (F) :
(a) Acidity order : $SiF_4 < SiCl_4 < SiBr_4 < SiI_4$
(b) Melting point : $NH_3 > SbH_3 > AsH_3 > PH_3$
(c) Boiling point : $NH_3 > SbH_3 > AsH_3 > PH_3$
(d) Dipole moment order : $NH_3 > SbH_3 > AsH_3 > PH_3$
(A) FTFT (B) TFTF (C) FFTT (D) FFTF

9. The interhalogen compound that cannot exist is
(A) IBr_3 (B) ICl_7 (C) IF_4 (D) BrF_5

10. $A + H_2O \longrightarrow B + HCl$
$B + H_2O \longrightarrow C + HCl$
Compound (A), (B) and (C) will be respectively.
(A) PCl_5, $POCl_3$, H_3PO_3
(B) PCl_5, $POCl_3$, H_3PO_4
(C) $SOCl_2$, $POCl_3$, H_3PO_3
(D) PCl_3, $POCl_3$, H_3PO_4

11. Among the following statements which one is true?
(A) NH_3 is more soluble than PH_3 in water and $\angle H - P - H > \angle H - N - H$.
(B) NH_3 is stronger base and stronger reducing agent than PH_3
(C) NH_3 has higher boiling point than PH_3 and has lower melting point than PH_3
(D) PH_3 is stronger reducing agent than NH_3 and it has lower critical temperature than NH_3.

12. $(Si_2O_5)_n^{2n-}$ anion is obtained when
(A) no oxygen of a SiO_4^{4-} tetrahedron is shared with another SiO_4^{4-} tetrahedron.
(B) one oxygen of a SiO_4^{4-} tetrahedron is shared with another SiO_4^{4-} tetrahedron.
(C) two oxygen of a SiO_4^{4-} tetrahedron are shared with another SiO_4^{4-} tetrahedron.
(D) three oxygens of a SiO_4^{4-} tetrahedron are shared with another SiO_4^{4-} tetrahedron.

13. Which of the following is not true about Helium?
(A) It has the lowest boiling point
(B) It has the highest first ionisation energy
(C) It can diffuse through rubber and plastic material
(D) It can form clathrate compounds.

14. The formation of PH_4^+ is difficult compared to NH_4^+ because

(A) lone pair of phosphorus is optically inert
(B) lone pair of phosphorus resides at almost pure p-orbital
(C) lone pair of phosphorus resides at sp^3 orbital
(D) lone pair of phosphorus resides at almost pure s-orbital

15. Which of the following equation is incorrectly written:

(A) $P_4 + 20\ HNO_3 \longrightarrow 4H_3PO_4 + 20NO_2 + 4H_2O$
(B) $I_2 + 10\ HNO_3 \longrightarrow 2HIO_3 + 10\ NO_2 + 4H_2O$
(C) $S + 6HNO_3 \longrightarrow H_2SO_4 + 6NO_2 + 2H_2O$
(D) None of these

16. The first ionisation energy of Na, NO, Xe and O_2 follows the order Na < NO < Xe = O_2 .O_2 reacts with powerful oxidising agent (PtF_6) to yield $O_2^+[PtF_6]^-$. If PtF_6 is allowed to react with other mentioned species then the product is/ are

(A) Only $Na^+[PtF_6]^-$
(B) Only $NO^+[PtF_6]^-$
(C) Only $Xe[PtF_6]^-$
(D) $Na^+[PtF_6]^-$, $NO^+[PtF_6]^-$, $Xe^+[PtF_6]^-$

17. Ammonolysis of $SiCl_4$ followed by heating produces a compound of Silicon (X). X is

(A) Covalent nitride (B) Ionic nitride
(C) Interstitial nitride (D) it is not a nitride

18. The **correct** order of boiling point of noble gases is :

(A) Xe < Kr < Ar < Ne
(B) Kr < Xe < Ar < Ne
(C) Ar < Xe < Kr < Ne
(D) Xe > Kr > Ar > Ne

19. Which of the following undergoes partial hydrolysis?

(A) B_2H_6 (B) BCl_3 (C) H_2SO_4 (D) BF_3

20. Which of the following exists as polymeric (covalent) solid at room temperature with coordination number '6' for the central atom?

(A) AlF_3 (B) $AlCl_3$ (C) $AlBr_3$ (D) AlI_3

(SECTION-B)

21. $Cl_2 + \underset{\text{(hot and conc.)}}{OH^-} \longrightarrow A + B$

Find the sum of oxidation state of Cl in A and B.

22. Find the number of molecule(s) of sulphuric acid produced when Marshall's acid undergoes complete hydrolysis.

23. Find the number of molecules, when they are undergo in hydrolysis at room temperature and the produced acid from central atom has the basicity of '2'.

PCl_5, SF_6, SF_4, P_4O_6, PCl_3

24. Find the number of species which undergo hydrolysis at room temperature.

CCl_4, $SiCl_4$, $AlCl_3$, BCl_3, NF_3, PCl_5, PCl_3, SF_6, SO_2Cl_2

25. Find the sum of basicity, number of P–O–P linkages and number of $p\pi$–$d\pi$ linkages in $H_5P_3O_{10}$.

26. Find the total no. of oxoacids containing S–S linkage.

$H_2S_2O_3$, $H_2S_2O_4$, $H_2S_2O_5$, $H_2S_2O_6$, $H_2S_4O_6$, $H_2S_2O_7$, $H_2S_2O_8$

27. Total number of CN^- ion are present in ICN(liq.)

28. How many number of species give white turbidity with H_2S?

$KMnO_4/H^\oplus$, $K_2Cr_2O_7/H^\oplus$, $KIO_3/H^\oplus$, $FeCl_3$, Br_2-water, conc. HNO_3, conc. H_2SO_4, H_2O_2

29. Which of the following species are pseudohalides ?

$CN^\ominus$, $SCN^\ominus$, $OCN^\ominus$, acac, SO_3^{2-}, $S_2O_3^{2-}$, en, $NC^\ominus$, $TeCN^\ominus$, $N_3^\ominus$, CO_3^{2-}

30. How many number of metals will produced NO gas with 20% dil HNO_3

Cu, Fe, Sn, Zn, Hg, Pb, Ag, Au