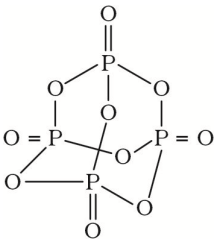
Daily Tutorial Sheet 1	JEE Main (Archive)

1.(C) Alum furnishes Al^{3+} ions which bring about coagulation of negativity charged clay particles, bacteria etc.

2.(D) 

3.(D) $CaOCl_2$ – or it can also be written as

$$\underset{x_1}{Ca}\,\underset{x_2}{(OCl)Cl}$$

hence oxidation number of Cl in OCl^- is

$$-2 + x_2 = -1$$

$$x_2 = 2 - 1 = +1$$

now oxidation number of another Cl is -1 as it is present as Cl^-.

4.(A) $_7N = 1s^2 2s^2 3p^3$

$_{15}P = 1s^2 2s^2 2p^6 3s^2 3p^3$

In phosphorus the 3*d*-orbitals are available.

5.(D)

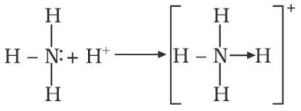
XeF_2	sp^3d	3 lone pairs
XeF_4	sp^3d^2	2 lone pairs
XeF_6	sp^3d^3	1 lone pair

6.(D) Due to the higher electronegativity of F, HF is more polar than HBr. Pure water contains H^+ and OH^- ions. In covalency, sharing of electrons between two non-metal atoms takes place.

7.(C) $H_2S + Hg_2S \longrightarrow Hg_2S + Hg$

8.(C) NO_2 and O_3 both have unsymmetrical structures, so they have permanent dipole moment.

9.(C) Ammonia is a Lewis base, accepting proton to form ammonium ion as it has tendency to donate an electron pair.



10,(A) ZnO is an amphoteric oxide and dissolves readily in acids forming corresponding zinc salts and alkalies forming zincates.

$ZnO + H_2SO_4 \rightarrow \underset{\text{zinc sulphate}}{ZnSO_4} + H_2O$; $\quad ZnO + 2NaOH \rightarrow \underset{\text{sodium zincate}}{Na_2ZnO_2} + H_2O$

11.(C) HCl gas in presence of moisture in air forms droplets of liquid solution in the form of cloudy smoke.

12.(C) Phosphine burns in the atmosphere of chlorine and forms phosphorus pentachloride.

$PH_3 + 4Cl_2 \rightarrow PCl_5 + 3HCl$

13.(C) In graphite, carbon is sp^2 hybridized. Each carbon is thus linked to three other carbon atoms forming hexagonal rings. Since only three electrons of each carbon are used in making hexagonal ring, fourth electrons of each carbon is free to move. This makes graphite a good conductors of heat and electricity.
Further graphite has a two dimensional sheet like structure. These various sheets are held together by weak van der Waal's force of attraction. Due to these weak forces of attraction, one layer can slip over the other. This makes graphite soft and a good lubricating agent.

14.(A) Glass is a translucent or transparent amorphous super cooled solid solution or we can say super cooled liquid of silicates and borats having a general formula $R_2O \cdot MO \cdot 6SiO_2$. Where $R = Na$ or K and $M = Ca, Ba, Zn$ or Pb.

15.(D) It is mercury because it exists as liquid at room temperature.