16.(F) Sodium when burnt in excess of oxygen, gives sodium peroxide as major product

$$Na + O_2 \xrightarrow{\Delta} \underset{\text{Major}}{Na_2O_2} + \underset{\text{Minor}}{Na_2O}$$

17.(B) Metallic Iustre of any metal is due to oscillation of free electrons present in the metal.

18.(A) H_2O is reduced as well as oxidized giving $H_2(g)$ at cathode and $O_2(g)$ at anode.

19.(AB) Solubility of a salt is influenced by two major factors, lattice energy and hydration energy. For greater solubility, there should be smaller lattice energy and greater hydration energy.

20.(BD) Zeolite acts as ion exchange resin and its Na^+ is exchanged with Ca^{2+} and Mg^{2+} ions present in hard water.

21.(D) The reaction involved is $BaO_2 + H_2SO_4 \longrightarrow BaSO_4 + H_2O_2$

The most electronegative atom, oxygen, in $BaSO_4$ and H_2O_2 has -2 and -1 oxidation state respectively.

22. Basic strength (i) decreases from left to right in period and (ii) increases from top to bottom in group. Therefore, $NiO < MgO < SrO < K_2O < Cs_2O$ Basic strength

23. $2KNO_3(s) + 10K(s) \longrightarrow 6K_2O(s) + N_2(g)$

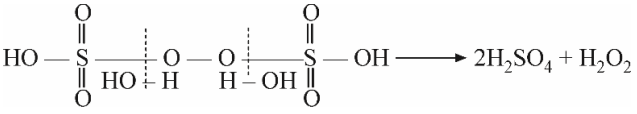
24.(A) In PbO_2, Pb is in +4 oxidation state and oxygen is in –2 oxidation state. In all other case, peroxide ion (O_2^{2-}) is present.

25.(B) Si is used in solar cells, because of its semi-conductor properties.

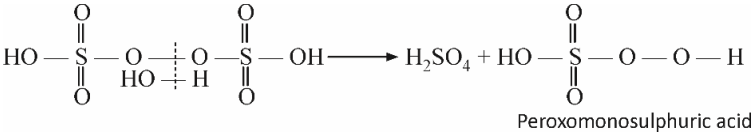
26.(A) Alkali metal form MH in which hydrogen is in -1 oxidation state. Both statements are correct and statement-II is correct explanation of statement-I.

27.(A) Electrolysis of aqueous Na_2SO_4 gives $H_2(g)$ at cathode and $O_2(g)$ at anode.

28.(C) Peroxodisulphuric acid $(H_2S_2O_8)$ on complete hydrolysis gives two moles of H_2SO_4 and one mole of H_2O_2 as



On partial hydrolysis, it gives on mole of H_2SO_4 and one mole of peroxomonosulphuric acid as



Peroxomonosulphuric acid

29.(B) Thermal stability of salts with common anion depends on polarizing power of cation. Greater the polarizing power, lower be their thermal stability. Hence,

$BeCO_3 < MgCO_3\,(II) < CaCO_3\,(III) < K_2CO_3\,(I)$

30. $A = NH_3$, $B = CaCO_3$

Reaction involved are :

$$3Ca + N_2 \xrightarrow{\text{Heat}} Ca_3N_2$$

$$Ca_3N_2 + 6H_2O \longrightarrow 3Ca(OH)_2 + 2NH_3$$

$$Ca(OH)_2 + \underset{\text{(From air)}}{CO_2} \longrightarrow \underset{B}{CaCO_3} + H_2O$$