**Q1.**Identify the reducing agent in the following reactions

(a ) 4 NH3 + 5 O2 → 4 NO + 6 H2O

(b ) H2O + F2 → HF + HOF

(c ) Fe2O3 + 3 CO → 2 Fe + 3 CO2

(d ) 2 H2 + O2→ 2 H2O

**Q2.**Identify the oxidising agent (oxidant) in the following reactions

(a ) Pb3O4 + 8 HCI → 3 PbCl2 + Cl2 + 4 H2O

(b ) 2 Mg + O2 → 2 MgO

(c ) CuSO4 + Zn → Cu + ZnSO4

(d ) V2O5 + 5 Ca → 2 V + 5 CaO

(e ) 3 Fe + 4 H2O → Fe3O4 + 4 H2

(f ) CuO + H2 → Cu + H2O

**Q3.**In one of the industrial processes used to manufacture sodium hydroxide, a gas X is formed as a byproduct. The gas X reacts with lime water to give a compound Y used as a bleaching agent in the chemical industry. Identify X and Y giving the chemical equation of the reactions involved.

Q4. A metal carbonate X reacting with acid gives a gas that gives the carbonate back when passed through a solution Y. On the other hand, a gas G obtained at the anode during electrolysis of brine is passed on dry Y, it gives a compound Z, used for disinfecting drinking water. Identity X, Y, G and Z.

Q5. During the extraction of metals, electrolytic refining is used to obtain pure metals.

(a ) Which material will be used as anode and cathode for refining silver metal in this process?

(b ) Suggest a suitable electrolyte also.

(c ) Where do we get pure silver in this electrolytic cell after passing an electric current?

**Q6.** When a metal X is treated with cold water, it gives a basic salt Y with the molecular formula XOH (Molecular mass = 40) and liberates a gas Z which easily catches fire. Identify X, Y and Z and also write the reaction involved.

**Q7.** A non-metal X exists in two different forms, Y and Z. Y is the hardest natural substance, whereas Z is a good conductor of electricity. Identify X, Y and Z.

**Q8.** A non-metal A, the largest constituent of air, when heated with H2 in a 1:3 ratio in the presence of a catalyst (Fe), gives a gas B. On heating with Oz, it gives an oxide C. If this oxide is passed into the water in the presence of air, it gives an acid D which acts as a strong oxidising agent.

(a) Identify A, B, C, and D

(b) To which group of periodic tables does this non-metal belong?

**Q9.** When zinc granules are treated with a dilute solution of H2SO4, HCI, HNO3, NaCI and NaOH. Write the chemical equations if a reaction occurs.

**Q10.** A white precipitate is obtained when adding a drop of barium chloride solution to an aqueous sodium sulphite solution.

(a ) Write a balanced chemical equation of the reaction involved

(b ) What other name can be given to this precipitation reaction?

(c ) On adding dilute hydrochloric acid to the reaction mixture, white residue disappears. Why?

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