Q1. Which of the following statement(s) is/are not true about the following decomposition reaction?

$2KClO3 \rightarrow 2KCl + 3O_2$

(a) Potassium is undergoing oxidation.
(b) Chlorine is undergoing oxidation.
(c) Oxygen is reduced.
(d) None of the species are undergoing oxidation or reduction.

Sol: (**a, b, c, d**)

Writing the oxidation number of each element above its symbol,

$$\overset{+1}{2K}\overset{+5}{Cl}\overset{-2}{O_3} \longrightarrow \overset{+1}{2K}\overset{-1}{Cl} + \overset{0}{3O_2}$$

(a) The Oxidation number of K does not change. K undergoes neither reduction nor oxidation. Thus, option (a) is not correct.
(b) The Oxidation number of chlorine decreases from +5 in $KClO_3$ to -l in KCl, hence, Cl undergoes reduction.
(c) Since, Oxidation number of oxygen increases from -2 in $KClO_3$ to 0 in O_2, oxygen is oxidized.
(d) This statement is not correct because Cl is undergoing reduction and O is undergoing oxidation.

Hence ***options (a) (b) (c) (d)*** all are correct answers.